Textile World

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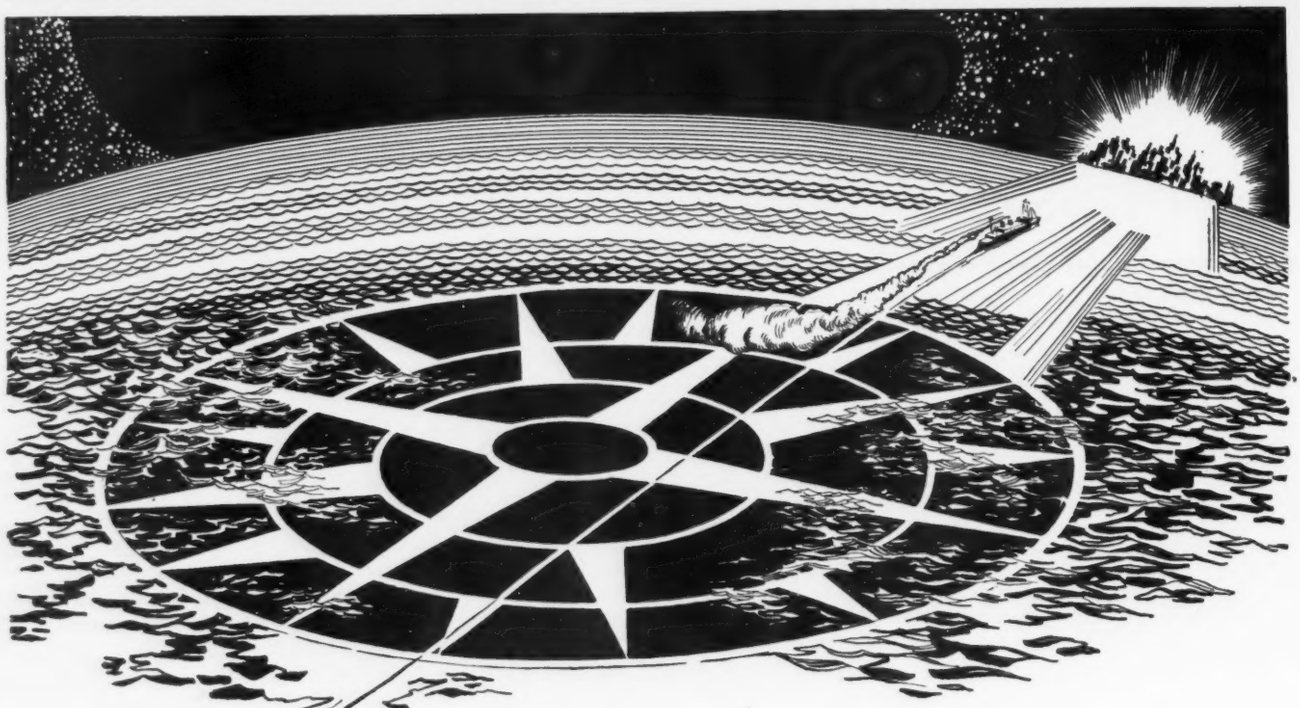

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Open Prices vs. Price Fixing

PART of official Washington seems to be suffering from both mental confusion and "cold feet" so far as the matter of manufacturers' price policies is concerned. Either malady is bad; the combination of the two is something awful.

The confusion is evident in the tendency to lump all attempts toward price sanity under the head of price-fixing.

Let us repeat, at the start, our own attitude toward the latter practice. We have stated in these columns that "price fixing has never fixed anything except prices." We still feel that way.

However, in our opinion, neither an open-price policy nor the registration of list prices is a form of price-fixing. One is the reporting of prices on consummated sales; the other is the filing of price lists, and of subsequent changes, with the Code Authority.

▼

However, even where this distinction between price-fixing and open prices is understood, there seems to be a present tendency on the part of individuals and groups within the NRA to shy away from anything remotely resembling a price policy. This is where the epidemic of "cold feet" comes in.

Naturally, we have every sympathy with consumers' groups and others in their desire to forestall unwarranted price advances or monopolistic tendencies. However, this desire should not be permitted to degenerate into hysteria.

One of the avowed purposes of the Recovery Act is to curb price-chiseling. It had gradually become evident that manufacturer, retailer and consumer were suffering from the results of this practice.

To curb it effectively, however, some form of open-price policy is necessary. Whether it be filing of list prices, or of prices on consummated sales, or a combination of both, is largely a matter of technique.

The practice of announcing and maintaining list prices, and of announcing and maintaining subsequent changes therein, represents nothing more nor less than the psychology which has impelled reputable retailers to adopt a one-price policy in their relations with their customers. We doubt if the average consumer would want to return to the old bargaining days.

Open-price arrangements, in turn, enjoyed official sanction even before the paralyzing anti-trust laws could be offset by code provisions.

Industry was promised some relief from those restrictions. Such relief, it seems to us, entails something of the type of price policy which is being proposed in the fair trade practice provisions supplementary to the textile codes themselves.

▼

It is undoubtedly inevitable that either price registration or an open-price arrangement should tend toward greater uniformity in prices. But this is not in itself inimical to the interests of the consumer. Ample leeway is left for price advantage resulting from efficient manufacturing or merchandising or both. All that these policies restrict is the sub rosa gossip which has been used as a tool with which to chisel at fair profits and fair wages.

For several years the consumer has enjoyed (?) a Roman holiday. He or she has been offered bargains made possible by the rottenest kind of labor conditions, and at the expense of the honest manufacturers and distributors who comprise the majority of our industry and trade. The prolonged depression has proved that these bargains have been brutally expensive to the consumers themselves.

To prevent their recurrence requires more than a mere statement on price policy. It requires enforceable provisions which will discourage the suicidal price-policies of recent years.

That is just what open-price and similar arrangements (always excepting price-fixing) are designed to accomplish. They are in keeping with both the letter and the spirit of the Recovery Act.

An attack of "cold feet" at this juncture could spell the ultimate defeat of the purpose of the Act.

The Editor Says:

WE'RE not much of a "joiner," but when we read of the formation of a national committee to safeguard all industry against the pilfering of ideas, we felt like rushing out to see what we could do to help. . . . Our vocabulary fails us when we attempt to express our opinion of idea thieves. We've always wondered why they weren't recognized for what they are: criminals. As such, they should be reached by criminal law, not civil law.

In fact, we regard them as far more despicable than those who steal tangibles. The latter can be replaced, but the product of a man's mind is, or should be, something peculiarly his own—something which can never be restored.

When we see a factory bearing a trade name palpably in imitation of the name created by a manufacturer of a similar product who has spent millions in promoting it and has earned a national reputation, we see red. In a recent court case involving such an issue—decided, incidentally, for the creator of the trade-name, on this particular point—the judge said: "I have little doubt that it (the trade-name) was chosen with the hope that it would carry with it some of the benefits of the plaintiff's wide advertising. Of course that fact does not establish the plaintiff's right, if the names are not actually deceptive. A man has the right to come as close to the line as he chooses, provided he keeps on the right side of it. . . ."

That may be correct, legally. Morally, it sounds all wrong. We believe people have got to develop a far different standard of ethics on this problem. Until they do, rats will continue to steal ideas.

✦

AS I LIVE . . . PROFITS!

WE cross our fingers and hold our breath as we write this item: The increasing frequency with which profits (small, but visible) are appearing in financial statements of textile mills offers much encouragement not only to stockholders and mill employees but to machinery builders and others supplying the industry. . . . Not to mention, of course, the bankers who have been suffering from textile headaches for, lo, these many years.

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THE INSTITUTE IDEA

REACTIONS to our suggestion for an American Textile Institute continue to come in:

E. J. McMillan, president of the Underwear Institute, favors, instead of a merged organization, a National Textile Conference Board constituted by the appointment of one to three representatives from each major branch of the industry. . . . . Charles H. Clark, secretary of the U. S. Institute for Textile Research, declares himself "completely in sympathy with your idea in its broadest *possible* aspects" but believes that to make it "possible" would require a long period of educational promotion. He suggests that the approach be through and by existing associations. . . . . E. T. Pickard, chief of the Textile Division, Department of Commerce, says "the editorial carries an excellent suggestion although I don't know that I would go as far as you do with any degree of optimism." He, too, suggests the "council" idea, representative of existing associations, as a start; out of this, he says, there might grow an organization taking more substantial form. . . . . B. S. Hawkins, president of Guerin Mills, Inc., says: "Certainly, some guiding medium is necessary. . . . . If such an institute as you suggest would do nothing more than make the industry face the facts, much could be accomplished." . . . . H. S. Davis, of Wharton School, University of Pennsylvania, suggests that "perhaps development lies along the road of cooperation on one or two tasks at a time, gradually moving toward what you have in mind." . . . . Walter C. Taylor, past-secretary of the Southern Textile Association, calls it a "very wonderful idea." . . . . Many others said yes, no, or maybe.

The Textile Institute, of England, writes us of its fear that the title suggested "would give rise to obvious confusion" and asks us to drop the description. We replied, first, that we were not suggesting a definite title but merely trying to indicate the type of the organization we had in mind; and, second, that even if we had been making a definite suggestion, our use of the word American distinguished the "title" from that of the British organization. We concluded: "Whether or not you have a prior claim on the use of the words Textile Institute in any combination with other words in a title, is a question which might more properly be debated when there is an actual case at issue."

And so it goes.

✦

I SEE BY THE PAPERS—

WE are continuing to encounter new interpretations of the code provisions limiting additional installation of certain types of textile machinery. Mark Sullivan, in the course of a piece on President Roosevelt's "social revolution," in the New York *Herald Tribune*, says: "Under NRA, for example, it is a prison offense for any cotton manufacturer to install a loom." . . . Just that, and nothing more, on this particular point.

And that, my dear readers, is the sort of information a nationally known political writer supplies to the cash customers of a great metropolitan daily.

✦

WALKER D. HINES

FOR five years, the cotton textile industry profited through the leadership of one of the outstanding national figures of recent years: Walker D. Hines. As president of the Cotton-Textile Institute from 1926 to 1929, and its chairman from 1929 to 1931, Mr. Hines pioneered along lines of industrial planning which today are finding nation-wide expression through the NRA codes. His death last month meant the loss of a business statesman, in the truest sense of that term.

To this writer, however—and we imagine to hundreds of others in the industry—his death meant above all the loss of one whose friendship we cherished as a rare privilege. We can only repeat what we said in these columns at the time of his retirement from the Institute: "He left behind him the record of a contribution to the American textile industry which has never been excelled by that of any one man. . . . The stamp of his character and of his ideals is indelibly fixed upon the history of the industry he has served."

Small Mills

FACE SPECIAL PROBLEMS UNDER CODES REQUIRING SPECIAL SOLUTION

IT WAS dusk as we entered a small woolen-mill town in Vermont during a field trip last month. We talked to the proprietor-manager in the dimly-lit mill office. We wandered a bit around the snow-fringed streets and got the "feel" of this little community.

The effect of this visit and of subsequent contacts with similar enterprises in both Vermont and New Hampshire during the trip was the strengthening of a conviction we had previously entertained: that these small industries in isolated communities represent at least as much of a social as an economic problem.

Usually, they are tied up inexorably with the life of the sections where they are located. They often represent the only important source of *cash* income to the inhabitants. Upon their continued operation depends, therefore, the difference between sustenance and living. Their payrolls furnish the means for recreation, education, and the other elements which tend to make life complete.

Unless one starts with a sympathetic understanding of this fact, he is not equipped to study intelligently the special problems which these industries face under the NRA codes.

First, let us put down the specific troubles which these manufacturers recited to us: They are finding it increasingly difficult to sell their goods. Part of this they attribute frankly to the general market conditions of the "digestive" period through which they are passing — but to a still greater degree, they maintain, it is due to their inability to compete with larger organizations less remote from market centers.

The factors which they say contribute to their competitive disadvantage include higher transportation charges on raw materials, coal and other products; cost of maintaining, in many cases, mill villages at a partial loss; failure to secure relief from unfair competitive practices which might compensate for the higher labor costs under the codes; inability to get their average wage as near the minimum wage as do mills in larger centers with greater turnover. (This last point, of course, is an exceedingly controversial one; we put it down here as a report of a complaint, not necessarily as a statement of fact.)

What do they want done about it? Two things, primarily: A differential in the wages and hours clauses of the codes, to apply to small industries; and immediate development and enforcement of fair trade practice provisions.

So much for the case from the inside.

We tried to get an outside viewpoint—from executives of larger organizations geographically near enough to be understanding, and not engaged in directly competing textile lines.

First, regarding the possibility of revision of codes to favor small industries: The opinion prevails that such a step is not feasible and that it would be inequitable. The difficulty of drawing boundary lines is at once evident. Furthermore, it is pointed out, the situation is not analogous to that which has impelled a differential in code provisions for retailers in towns under a certain size. The latter are engaged in intra-community competition; on the other hand, manufacturers who ship their products to the large markets are competing with other manufacturers in other sections. The point where fairness to the small industry would stop and unfairness to the large organization would begin is another difficult distinction to draw.

On the question of application of fair trade practices, all are agreed, of course, that this represents one of the most urgent necessities facing all industries. Progress is being made in this direction.

Some observers state bluntly that many small mills have stayed in business merely by perpetuating an uneconomic wage structure and that the loss of their advantage has merely ended an unsound situation. Fortunately or unfortunately—depending on one's point of view—the problem cannot be dismissed in this way because there is still the great social factor of the relationship of the small mills to their communities.

In certain outside quarters, we encountered a more positive approach to the question. These observers believe that the solution must come largely from within the small organizations. Principally, they emphasize the need for a careful study of the merchandising problems of these concerns, leading to such possible steps as changes in type of product, changes in selling arrangements, greater tendency toward specialization, more attention to cost methods, and even concentration of two or more relatively adjacent plants under one roof, with or without actual corporate mergers.

Even this brief statement of the problem reveals the absence of a categorical answer. It is impossible to generalize about small mills; they differ widely as to competitive situation. However it *is* possible to set down certain self-evident statements of fact.

First, the small industries must be protected. Even numerically, they represent a vital part of our economic structure. Robert Lund, president of the National Association of Manufacturers, stated recently that industries employing 20 persons or less comprise three-quarters of the 200,000 manufacturing concerns in the United States. Their fate is no trivial economic matter.

Socially, as indicated above, their importance is far more significant. Not only is the well-being of the present generation concerned, but the future of American industry is at stake. Certainly, this writer wants no part in a movement which would encourage the further growth of great industrial centers, with their economic, social, and aesthetic horrors—and threaten the very existence of industries which are a part of their communities, rather than a super-imposed burden.

We end on a cheerful note. We have stated that this problem demands study and solution. It is receiving study—and, we believe, at least some constructive answers will be forthcoming. A Committee on Small Industries has been appointed by Gerard Swope, chairman of the Business Advisory and Planning Council for the Department of Commerce, and is now at work. The New England Council is tackling the problem for its own people. Other national and sectional organizations are giving thought to it. Their investigations demand the active interest and support of every manufacturer, large or small.

Else, in the process of saving our economic lives, we may lose something nationally which cannot be expressed in balance-sheets but which is far more important than temporary release from depression.

Rayon Plant Additions

FEATURE OF RECENT CONSTRUCTION BY TEXTILE MILLS

TEXTILE mill construction announced during the last six months of 1933, consisting almost entirely of plant additions, represented an aggregate capital outlay of slightly less than $3,000,000, not including production machinery and equipment. This figure was 13% less than that reported for the first half of the year, and total volume for 1933, according to reliable information received by TEXTILE WORLD, was approximately $6,330,000. There were comparatively few large projects, only four individual jobs involving as much as $250,000 each, but many small plant extensions were reported in all branches of the industry.

New construction started during the last half of 1933 is summarized, as follows:

Rayon (Yarn and Weaving)	$935,000
Cotton Mills	886,000
Processing Plants	488,000
Knitting Mills	234,000
Woolen and Worsted Mills	218,000
Silk Mills	187,000
Total	$2,948,000

Georgia, with $601,000, and North Carolina, with $435,000, were the leading States in new textile mill construction. Largest individual projects in these States were additions to the Tubize-Chatillon Corp. rayon plant at Rome, Ga., for which building plans were prepared by J. E. Sirrine & Co., Greenville, S. C.; to Martha Mills, Thomaston, Ga., for which engineering was handled by Robert & Co., Inc., Atlanta, Ga.; and to American Enka Corp., near Asheville, N. C. New construction for the entire year, tabulated by States, follows:

North Carolina	$1,446,000
Tennessee	925,000
South Carolina	916,500
Georgia	794,000
Virginia	386,000
Rhode Island	332,000
Pennsylvania	288,000
New Jersey	235,000
Alabama	234,000
Other States	775,000
Total	$6,331,500

Extensions to textile plants during the last half of 1933, with few exceptions, were made to balance productive equipment and thus obtain more efficient operation under NRA code regulations. Some of these projects did not appear in mill construction reports, for in many cases additional floor space was not required, but building alterations and repairs often were necessary. Much of this work was handled by mechanics, carpenters, painters and laborers on regular mill payrolls and, because the services of contractors, architects and engineers were not engaged, little or no publicity was given to these projects. Expenditures for work of this kind, if added to our mill construction figures, probably would increase totals by as much as 10%.

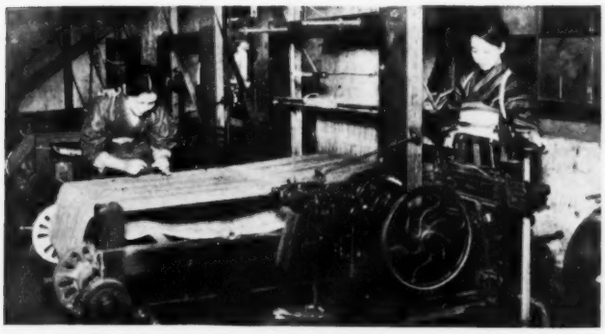
The 35,000-spindle tire code unit for Martha Mills, a subsidiary of B. F. Goodrich Co., was the largest individual new construction job announced in the cotton manufacturing division during the last six months of 1933. Other important projects in this branch of the industry were: a weave shed extension to Aponaug Mfg. Co., Kosciusko, Miss.; an addition to the spinning mill of Dixie Mercerizing Co., Lupton City, Tenn.; and plant extensions for the Erwin Cotton Mills Co., Durham, N. C., and Victor-Monaghan Co., Walhalla, S. C.

New construction in the rayon weaving and yarn producing industry, which amounted to almost 32% of the industry's total in the last half of the year, included, in addition to projects already mentioned, plant extensions for DuPont Rayon Co., at Old Hickory, Tenn., and Waynesboro, Va.; for Celanese Corp. of America, at Amcelle, Md., and a power house addition and increase in the filtration plant of Tennessee Eastman Corp., Kingsport, Tenn.

There was a substantial increase in the number of enlargements of processing plants, both in the North and in the South, but involving comparatively small individual expenditures. The last half of the year was marked by little construction in the knitting branch of the industry, the only jobs being plant additions, of which those for Adams-Millis Corp., Kernersville, N. C.; Cartersville (Ga.) Mills; and Dovedown Hosiery Mills, Griffin, Ga., were the largest.

Industrial engineers who specialize in textile mill construction report an increasing number of inquiries from their clients with the view to making additions, alterations and repairs to existing mill buildings. Manufacturers are realizing more and more, in the light of their experience in operating under NRA codes, that efficient machinery and good plant layout are just as essential as ever, and that the poorly equipped plant has little chance of holding its own against the more efficient units. The outlook is for a continuation of the trend toward the installation of additional equipment for balancing mill machinery set-ups. Rayon weaving shows signs of continued expansion and, as much of the suitable floor space in desirable locations has already been taken, it is probable that this branch of the industry will engage in further new construction during 1934.

Indo-Japanese Agreement



MARKS IMPORTANT STEP IN TENSE INTERNATIONAL SITUATION

From Our Manchester (Eng.) Correspondent

COTTON leaders and economists throughout the world are closely watching events in the international situation, which have been particularly prominent during the last few months on account of the publicity given to the growth of the Japanese industry and its menace to European and other cotton manufacturing countries.

The outstanding recent development has been the signing of the Indo-Japanese Agreement, which was reached as a result of months of negotiation. The Indian cotton industry has been feeling the effects of Japanese competition for some time and it has been unable to compete in spite of high tariffs. The Indian Government, however, has had to watch the interest of the masses of the population and give them the advantage of the cheap available supplies of Japanese cotton goods. Moreover, it has been fully alive to the importance of Japan as a customer for Indian-grown cotton.

Thus the Indo-Japanese Agreement has been formulated on these lines: Japan guarantees to take a certain quota of Indian cotton, and in the main India sanctions a large proportion of her consumption of cotton goods to be supplied by Japanese manufacturers. Actually, imports of Japanese cotton goods into India are to be limited to 400,000,000 yd., which compares with 579,000,000 yd. in the last fiscal year. It is anticipated that this will leave scope for a healthier state of affairs in the Indian cotton mills, and at the same time leave room for a larger percentage of Lancashire goods to be imported than has been the case in the last few years.

The result of the British mission to India last year was a much greater feeling of goodwill between Lancashire and India, a promise of lower tariffs on Lancashire goods, and on Lancashire's part a genuine attempt to foster the use of Indian cotton.

The rapid strides made by Japan in gradually extending its activities to big and small markets throughout the world have become a steadily increasing menace to the British cotton industry, which has in the past largely depended upon an export trade for its existence and even in its present reduced circumstances is still the largest cotton goods exporting industry in the world. Were it only a question of dividing the major world markets for cotton goods between Japan and Lancashire the position would be comparatively simple, but the post-war policy of nationalism carried out by so many countries with the assistance of import tariffs and quotas has greatly complicated matters.

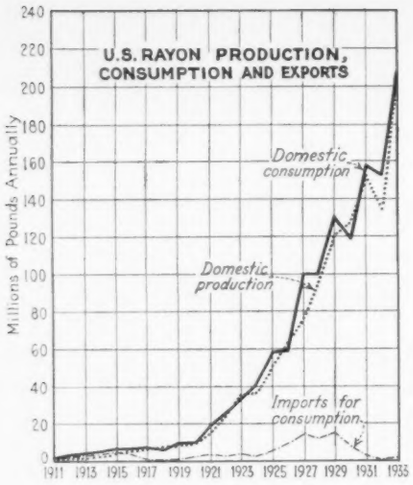
This desire to become self-supporting in the manufacture of cotton piece goods has been most prominent in the case of India and China, and the Lancashire cotton trade has had to fight this side by side with the growth of the powerful Japanese industry. A similar state of affairs has grown up in many other important markets, notable among which have been the cotton industries of Canada, Brazil and the Argentine.

This great development in productive capacity has been followed by the wave of world economic depression, and many hold that the policy of every country becoming manufacturing centres has contributed much to the economic chaos. At all events, at the time when there has been more spinning and weaving machinery in existence than ever previously, world purchasing power has been below normal and serious complications have been an obvious consequence.

American cotton goods manufacturers are not affected by the growth of new cotton industries to any serious degree, as they have such an important outlet in their own home market. Whether the growing importance of other types of cotton will in the long run have an effect upon American cotton growers remains to be seen, but certainly progress is being made with the cheap Indian and Russian growths. Taking a long view, a decline in consumption of American cotton would have repercussions upon the American manufacturing industry on account of a lower purchasing power in the cotton-growing States, but doubtless the American Senate will be able to deal with any such tendency when the time arises.* The United States is also powerful from a reciprocal trading standpoint, and could probably use this power in connection with the raw cotton question.

The question of rayon piece goods in the export markets is a rather different matter, as up to the present only the Japanese have been able to produce rayon goods at a sufficiently low price to create a large-scale demand in countries of low purchasing power. It has definitely been established that Japanese rayon fabrics, most of which are 100% rayon, have displaced medium-priced Lancashire cotton goods on quite an appreciable scale in India and elsewhere, and we may expect to see a further move in this direction in the event of there being similar agreements (limiting Japanese exports of cotton goods) to that which has just been signed in India.

*We can't quite decide whether or not our English correspondent is poking a little fun at the New Deal.—*Editor.*



Rayon Prod

SET NEW

IN UNITED

Through the cooperation of rayon producers representing approximately 90% of the industry, the "Textile Organon," published by Tubize Chatillon Corp., Stanley B. Hunt, editor, presents in its current issue not only the 1933 annual statistics but also a completely revised schedule of comparable data for the domestic industry back to its beginning in 1911. Incidentally we are gratified to note that TEXTILE WORLD'S estimate of 208,000,000 lb. for domestic output in 1933,

RAYON production in 1933 set a new high record of 207,578,000 lb., a figure 54% above the 1932 total of 134,814,000 lb. and 45% greater than the previous record year of 1931. Consumption of rayon during 1933 kept pace with production, totaling only one-half million pounds less, or 206,773,000 lb., as compared with 152,178,000 lb. in 1932.

Thus year-end stocks in 1933 showed but a small increase over the Dec. 31, 1932, stocks, yet they amounted to less than a 3 weeks' supply. Therefore the industry continues to be in a most healthy state of balance as between the production and distribution of its product.

Table B indicates the relative trends of rayon production by process. It will be noted that this table is given in percentage and although the acetate process is the only one to show any definite upward tendency, it should not be presumed that a percentage decline here reflects a decline in the poundage production made by any one process. In fact, if the production of rayon by the various processes is changed into poundage figures, a universal upward tendency will be found. However, the figures of Table B clearly indicate, as noted, that the growth of acetate rayon production in recent years has been the most rapid of any of the processes.

Distribution by Branches of Industry

The distribution of yarn by trades is shown in Tables C, D, and E according to viscose process yarns, yarns made by other processes, and total yarns, respectively. The tremendous shift in distribution of rayon from the knitting field and into weaving is clearly shown here, although the amount of yarn consumed by underwear and hosiery manufacturers is still most sizable. Perhaps it is more accurate to say that the increase of rayon consumption in the knitting field has not been as rapid as in the weaving field since 1929.

The production of rayon by denier is shown in Tables G and F, according to process. Here the pronounced tendency to fine sizes is clearly brought out in all processes, but more particularly in the non-viscose

TABLE A.—United States Rayon Production, Consumption, Imports, and Exports—1911 to 1933

(Units are Thousands of Pounds)

Year	(1) Domestic Production	(2) Foreign Trade: Imports for Consumption	(3) Foreign Trade: Domestic Yarn Exports	(4) Import Balance (No. 2-No. 3)	(5) Change in Dom. Stocks Prev. Dec. to Current Dec.	(6) Production Plus Import Balance *Col.* 1+*Col.* 4	(7) Domestic Consumption *Col.* 6—*Col.* 5
1911	364	1,800	Not reported separately before 1925	1,800	+30	2,164	2,134
1912	1,111	1,750		1,750	....	2,861	2,861
1913	1,816	2,430		2,430	+250	4,246	3,996
1914	2,422	2,740		2,740	—20	5,162	5,182
1915	4,334	2,450		2,450	+225	6,784	6,559
1916	5,778	900		900	+35	6,678	6,643
1917	6,544	370		370	—150	6,914	7,064
1918	7,386	180		180	+1,250	7,566	6,316
1919	8,278	1,072		1,072	+50	9,350	9,300
1920	10,229	1,480		1,480	+2,230	11,709	9,479
1921	14,991	3,276		3,276	—1,480	18,267	19,747
1922	23,700	2,116		2,116	+1,155	25,816	24,661
1923	34,494	3,029		3,029	+4,960	37,523	32,563
1924	36,328	1,954		1,954	—3,950	38,282	42,232
1925	51,902	5,441	148	5,293	—1,930	57,195	59,125
1926	62,692	9,345	400	8,945	+11,010	71,637	60,627
1927	75,555	15,028	401	14,627	—9,840	90,182	100,022
1928	97,232	12,117	196	11,921	+9,020	109,153	100,133
1929	121,283	15,039	223	14,816	+4,770	136,099	131,329
1930	126,805	6,341	345	5,996	+15,605	132,801	117,196
1931	150,879	1,804	314	1,490	—4,990	152,369	157,359
1932	134,814	197	653	—456	—17,725	134,358	152,178
1933	207,578	*950	*1,100	—150	+655	207,428	206,773

*Estimated.

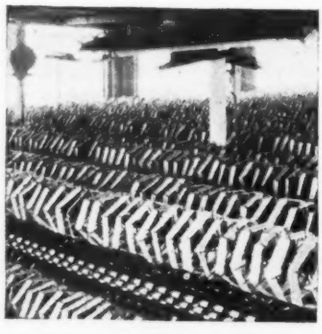
PRODUCTION AND STOCK FIGURES. This complete survey from 1911 to 1933 made in January 1934 on the basis of original reports from rayon producers. Extent of coverage on these reports is as follows: viscose process 100%, cuprammonium process 100%, nitrocellulose process 100%, acetate process approximately 30%, entire industry approximately 90%.

TABLE B. Classification of Rayon Production by Process—1925 to 1933

(In Per cent)

	1925	1926	1927	1928	1929	1930	1931	1932	1933
Viscose Process	85.7	85.2	83.3	84.0	85.1	86.2	84.8	78.6	76.4
Acetate Process	3.2	4.2	6.3	6.2	6.8	7.7	10.0	13.5	17.3
Other Processes*	11.1	10.6	10.4	9.8	8.1	6.1	5.2	7.9	6.3
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

*Cuprammonium and Nitrocellulose combined to avoid disclosure of individual company operations.



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HIGH RECORD STATES IN 1933

made in its annual rayon number in September, was so close to the final official figure: 207,578,000 lb. ..... We are reprinting herewith the major part of the text and data included in the "Organon" survey.

processes, of course. In order to clarify this tendency for the reader, a grouping of "fine deniers" and "coarse deniers" has been made at the bottom of each table.

It will be seen that about 25% of the viscose production was of fine deniers in 1933, while in the other processes the average was nearly two-thirds fine denier. For the industry as a whole about one-third of the production was fine denier and about two-thirds was of the coarser deniers. According to one method of calculation, the average denier of viscose yarn produced in 1933 was 140 denier. This figure compares with an average of 141 denier in 1932. Thus, it will be seen that on the basis of denier (weight per unit length) the 3.5% relative increase in fine sizes but slightly more than offset the corresponding increase of 2.2% in deniers of 200 and larger. Calculated on the same basis, the average denier of all rayon spun in 1933 was 130 denier, as against an average of 134 denier in 1932. There has been a steady trend toward finer yarn since the records began.

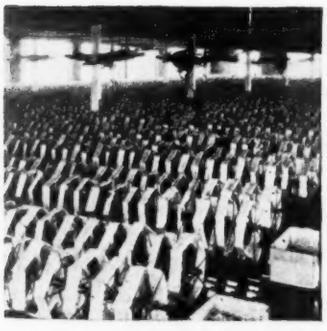


TABLE C.—Distribution of Viscose Process Rayon Shipments by Trades—1912 to 1933

(In Per cent)

Year	(1) Hosiery	(2) Other Knit Goods	(3) Broad Woven Goods	(4) Narrow Woven Goods	(5) Miscellaneous	(6) Total Shipments	(7) Total Knit Goods	(8) Total Woven Goods	(9) Miscellaneous
1912	30	7	23	Included in Miscellaneous before 1922	40	100	37	23	40
1913	40	5	25		40	100	45	25	30
1914	47	3	28		22	100	50	28	22
1915	65	5	22		8	100	70	22	8
1916	56	11	22		11	100	67	22	11
1917	45	15	29		11	100	60	29	11
1918	40	17	31		12	100	57	31	12
1919	28	18	32		22	100	46	32	22
1920	25	22	24		29	100	47	24	29
1921	23	31	22		24	100	54	22	24
1922	27	30	24	14	5	100	57	38	5
1923	23	28	33	12	4	100	51	45	4
1924	22	28	41	7	2	100	50	48	2
1925	21	20	51	6	2	100	41	57	2
1926	21	30	43	4	2	100	51	47	2
1927	18	34	42	4	2	100	52	46	2
1928	16	38	41	3	2	100	54	44	2
1929	15	40	41	2	2	100	55	43	2
1930	13	36	48	2	1	100	49	50	1
1931	9	36	51	3	1	100	45	54	1
1932	9	27	59	3	2	100	36	62	2
1933	5	21	70	2	2	100	26	72	2

TABLE D.—Distribution of "Other" Rayon Shipments by Trades*—1930 to 1933

1930	34	33	31	1	1	100	67	32	1
1931	40	18	40	1	1	100	58	41	1
1932	30	19	49	1	1	100	49	50	1
1933	21	16	61	1	1	100	37	62	1

TABLE E.—Distribution of Total Rayon Shipments by Trades—1930 to 1933**

1930	16	35	45	3	1	100	51	48	1
1931	14	33	50	2	1	100	47	52	1
1932	14	25	57	2	2	100	39	59	2
1933	9	20	67	2	2	100	29	69	2

* Based on combined shipments of all acetate, cuprammonium, and nitrocellulose process yarns.

** These percentages are calculated from the total poundage figures, of course. Therefore they represent a weighted average of the percentages given in the "Viscose" and "Other" tables of distribution above. Before 1930 the distribution of total yarn shipments was essentially the same as the viscose process distribution.

EXPLANATION OF TERMS USED IN TABLES C, D AND E.

COLUMN 1, Hosiery, includes all manufacturers of men's and women's seamless and full-fashioned hosiery. COLUMN 2, Other Knit Goods, includes all manufacturers of circular and flat knit underwear plus other knit goods such as outerwear, sweaters, neckties, knitted dress goods, etc. The old separation of "Underwear" and "Other Knit Goods" has been eliminated because of the non-continuity of these two series due to frequent reclassifications of customers' accounts by the various rayon producers. It may be said, however, that approximately 90% of the yarn shipped in this category is used in knit underwear, the remaining 10% being used in other knit goods. COLUMN 3, Broad Woven Goods, includes all broad loom weavers whether they be "silk weavers," "cotton weavers," "woolen and worsted weavers," or rayon weavers. COLUMN 4, Narrow Woven Goods, includes manufacturers of such items as ribbons, tapes, woven elastic goods, etc., which are of a width narrower than 12 inches. COLUMNS 5 and 9, Miscellaneous, includes all other outlets such as bag, lace, and braid manufacturers, for example. COLUMN 7, Total Knit Goods, is the sum of Columns 1 and 2. COLUMN 8, Total Woven Goods, is the sum of Columns 3 and 4; note that the figures in this column are not quite complete before 1922 (see Column 4).

TABLE F.—Classification of Viscose Process Rayon Production by Denier—1927 to 1933

(In Per cent)

	1927	1928	1929	1930	1931	1932	1933
75 denier & finer (87 & less)	3.1	1.6	1.4	1.3	1.2	1.4	0.9
100 denier (88-112 denier)	3.4	5.6	7.0	9.0	11.5	19.3	23.3
125 denier (113-137 denier)	0.3	0.6	1.3	3.1	0.7	1.9	2.1
150 denier (138-162 denier)	75.2	74.9	74.4	72.0	73.6	66.9	61.0
175 denier (163-187 denier)	1.3	0.4	0.2	0.5	0.1	...	...
200 denier (188-249 denier)	2.2	1.9	1.6	1.2	0.8	1.8	2.0
300 denier (250-374 denier)	13.1	12.8	12.3	11.5	10.3	7.5	8.9
450 & coarser (375 & up)	1.4	2.2	1.8	1.4	1.8	1.2	1.8
Sub-Total Fine Deniers (112 denier and finer)	6.5	7.2	8.4	10.3	12.7	20.7	24.2
Sub-Total Coarse Deniers (113 denier and coarser)	93.5	92.8	91.6	89.7	87.3	79.3	75.8
Grand Total of all Deniers	100%	100%	100%	100%	100%	100%	100%

TABLE G.—Classification of "Other" and Total Rayon Production by Denier—1930 to 1933

(In Per cent)

	Other Processes*				Total Rayon Production**			
	1930	1931	1932	1933	1930	1931	1932	1933
75 denier & finer (87 & less)	16.2	19.0	12.7	20.2	3.3	3.9	3.8	5.7
100 denier (88-112 denier)	24.8	19.4	34.7	42.8	11.2	12.7	22.6	28.3
125 denier (113-137 denier)	9.9	17.9	10.3	7.0	4.1	3.3	3.7	3.3
150 denier (138-162 denier)	49.1	40.8	41.4	26.0	68.8	68.6	61.4	52.2
175 denier (163-187 denier)	...	2.4	0.5	0.1	0.4	0.5	0.1	...
200 denier (188-249 denier)	...	...	0.1	2.6	1.1	0.7	1.4	2.1
300 denier (250-374 denier)	...	0.5	0.3	1.3	9.9	8.8	6.0	7.0
450 & coarser (375 & up)	...	...	...	...	1.2	1.5	1.0	1.4
Sub-Total Fine Deniers (112 denier and finer)	41.0	38.4	47.4	63.0	14.5	16.6	26.4	34.0
Sub-Total Coarse Deniers (113 denier and coarser)	59.0	61.6	52.6	37.0	85.5	83.4	73.6	66.0
Grand Total of all Deniers	100%	100%	100%	100%	100%	100%	100%	100%

* Based on the combined production of all acetate, cuprammonium, and nitrocellulose process yarns.

** These percentages are calculated from the total poundage figures, of course. Therefore they represent a weighted average of the percentages given in the "Viscose" and "Other" tables of denier distribution.

Silk-Winding Analysis . . .

SECURING GREATEST ECONOMY IN PREPARATION OF WARPS

By Otto W. Bitzenhofer

ANY thorough analysis of the process of winding silk from skeins to warp bobbins involves a study of three factors, namely, the methods of the operator, the condition of the machinery, and the character of the thread. The purpose of this article is to show how a systematic investigation of these factors can result in increased production, lower cost, and the ability to attain efficiency whether the orders are large or small. The data are based largely on an analysis recently made in a German silk mill, in which grege threads of 13/15 and approximately 20/22 denier were being wound.

Early investigation showed that the silk being brought to the winding department was wound with a speed and number of spindles per operator determined either by the operators themselves or by the foreman. As a result, speeds ranged from 280 to 380 r.p.m., and the number of spindles per operator varied widely.

The preliminary work also showed that the brake weights hanging on the swifts for regulating the speed varied from about 60 to 100 grams, or from about 2 to 4 oz. The weight of the spindles, including the rolls or heads ranged from 40 to 55 grams, while the diameters of the spindle rolls or heads ran from .9 to 1.3 in. The weights of silk on the bobbins varied between 30 and 100 grams when winding was completed. The amount of material wound per hour varied from 1.78 to 3.30 lb. It was noted that excessively heavy brake weights were causing excessive strain on the thread and a sliding of the bobbins on the spindles.

For analysis, the time required for the operation of winding can be divided into three major parts; pure running time of the machine; required indirect time, consisting of that required for preparing the skeins, putting the skeins on the swifts, and exchanging the bobbins; and the lost time, including that required for correcting simple thread breaks, correcting breaks which require hunting for one end on the swift, correcting breaks which require hunting for one end on the bobbin, correcting breaks which require hunting for ends on both skeins and bobbins, untangling twisted threads, walking from one location to another, and overcoming stoppage or interruptions due to other causes.

An analysis of the work of six winding girls is recorded in Table I. This shows that winding girl *M* must be considered the best operator, as she required the shortest total working time. Winder *E* corresponds to a good average, and her performance was selected as the basis for further tests. Worker *F* is the slowest. Although the time consumed on each individual item is small, the totals are so high that they practically determine the efficiency of the winding department.

It will be noted that the extreme difference in time requirements is between winder *F* and winder *M*, the former requiring 24% more than the latter. It must be remembered that the girls were working under test and that in actual practice differences of 30 to 40% are not uncommon. One of our early objectives, therefore, was to raise the production of all the winders to at least the good average of winder *E*.

The amount of time required for walking between stopped swifts is another factor in lost production which requires special consideration. It would not have been particularly surprising, for example, if winder *F* had been found to require less walking time than some of the others, because it is easily possible for a rapid walker to lose all the time saved in that manner through unskillful manipulation of the machine. This often happens in the case of learners. Table II, however, shows that winder *E* is the quickest in getting from one stopped spindle to another, while winder *M* is second. It is likely that the winders who show up best in Table I reach a decision as to what is causing the stoppage a second or so before they reach the spindle.

An important step in raising the efficiency of the winding department is a systematic overhauling and repair of the machinery. In the case of the mill in question, this study of the machines disclosed that a more satisfactory winding of the bobbins was obtained with a spindle weight averaging 45 grams, a swift-brake weight of 50 to 70 grams, and a machine speed of 320 to 380 r.p.m. The lower range of the speed proved desirable for the 13/15-denier grege, but the upper limit of 380 was found suitable for the 20/22-denier. The maintenance of such speeds, however, presupposes the maintenance of a good condition of the machine. Heavy spindles or heavy swift weights (and even excessively

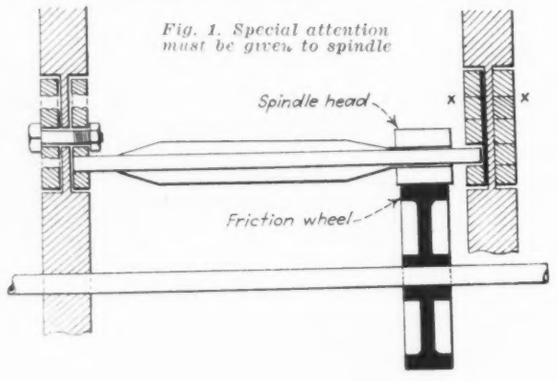


Fig. 1. Special attention must be given to spindle

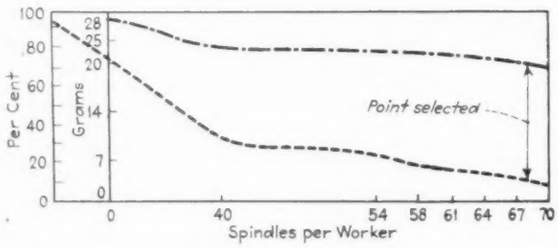


Fig. 2. Effect of number of spindles per worker on idle time and production per spindle

heavy skeins) will cause excessive thread breakage at the high speed. On the machines in question it was found that the spindle heads should have a diameter ranging from .9 to 1.0 in.

A particularly important factor in the performance of a winding machine is the efficiency of the friction drive between the friction wheel and the head of the spindle. To test this factor, the running time of several spools is determined by weighing the quantity wound within a given time, and from that calculating the yards wound per minute.

Tests were made on every spindle and the results tabulated. Variations as high as 25% were noted, indicating the vital necessity of overhauling the machines.

I shall mention a few other things to which we paid particular attention in the overhauling. We made certain that the spindle springs had the shape shown in Fig. 1, because we found in some cases that bent or incorrectly shaped springs were responsible for a slipping of bobbins. We made certain that the surface of each bobbin head was parallel to the surface of its friction wheel in order that whole and uniform contact might be realized. The machines with which this mill was equipped were provided with spindle bearings in rotatable fiber disks which might be moved around to provide new bearings at any time. Wherever necessary, we revolved these disks to provide these new bearings. We also looked out for any possibility of side play at either end of the spindle or swift in order to reduce the danger of clogging through the accumulation of thread waste at these points. At many places on the machine we applied powdered chalk in order to reduce the possibility of waste adhering.

The result of our repair work was an average increase in yards per minute of 15.5%. In addition, however, it reduced the range of speeds to a limit of about 12 yd. per min.

Having checked the workers and the machines, we then gave our attention to the silk. This we studied by running various qualities and skeins on a machine which had previously been overhauled and brought to a condition representing a good average. We recorded the character and the number of the machine stops which might be blamed exclusively on the material being run. This gave us an excellent means for comparing the suitability of one material with that of another.

It became apparent that the results depended to a considerable exent on how the skeins were handled when they were unpacked in the stock room, how they were conveyed to the winding machines, and how they were placed on the swifts. It was found that the best atmospheric conditions for the department were 65 to 70° F., and 50 to 55% relative humidity.

In these tests we found it perfectly in order to increase the size of the bobbin, and therefore the bobbins holding only 30 to 35 grams of wound silk were discarded in favor of bobbins holding from 50 to 100 grams, the lower weight for the finer silks and the higher weight for the heavier silks. The larger bobbins served to reduce the number of bobbin changes and also provided higher average speeds due to the larger diameters. It was also found possible to use heavier skeins, and, therefore, on the 20/22 denier, for example, skein weights were increased from 30 or 35 grams to 90 or 100 grams. The savings thus afforded were carefully compared to the cost of the increased thread breakage and stops, but the balance was found in favor of the larger bobbins and heavier skeins.

Table I—Ability of Workers

Average Time Required in 100ths of Minute

Worker	M	S	T	W	E	F
To prepare skein	22	26	24	27	28	30
To put skein on swift	42	48	42	50	42	44
To exchange bobbin	18	18	19	21	17	19
To piece up simple break	12	18	20	19	19	21
To piece break requiring swift search	20	26	22	18	26	28
To piece break requiring bobbin search	18	21	18	20	19	22
To piece break requiring search of both	41	42	45	44	40	48
To untangle twisted thread	10	13	9	14	13	15
Total	183	212	199	213	204	227
Rating of worker	1	4	2	5	3	6

Table II—Walking Time

Percentage of Total Time

Worker	M	S	T	W	E	F
To walk between stopped swifts	9.2	10.0	12.1	11.3	8.3	12.3
Rating of worker	2	3	5	4	1	6

Table III—Relation of Spindles per Worker to Inactive Time and Production

20/22-denier grege, 30-gram skeins, 55-to 60-gram bobbins

Spindles	Per Cent Inactive Time	Grams per Worker	Grams per Spindle
1	95.0	28	28.0
40	33.0	960	24.0
54	24.7	1240	23.0
58	18.7	1310	22.6
61	15.5	1355	22.2
64	13.1	1410	22.0
67	11.4	1450	21.6
70	9.0	1448	20.7

A very important part of the work was to determine the most efficient number of spindles to be tended by one operator. To reach this figure we first set about to determine the maximum number of spindles which a girl of good average ability could tend without any total loss of production per girl. This figure we found to lie between 60 and 70 spindles. Naturally, the tests used for this purpose were made on machines in good condition and running the quality of material selected by the tests immediately preceding.

Table III and Fig. 2 show the successive steps in building up to a figure of 60 to 70 spindles per operator. At first 40 spindles were assigned to each of the girls under test and the production and amount of inactive time were noted. Then the number of spindles was stepped up at intervals of four and then at intervals of three, and the same data recorded. When the inactive time of the operator had been brought down to between 10 and 15% the production per operator was found to be decreasing, and the work was stopped as having reached a reasonable limit. The production per spindle was plotted with the amount of inactive time, as shown in Fig. 2. The study I have reported here was made on the heavier denier, but a similar study was also made on the finer denier.

The investigation in this mill resulted in an increase in production of 17.3%. The work was so complete that normal rates of production were established for all the operators, machines, and types of silk which the mill uses. The cost of the investigation and of the new parts required for the machines were absorbed in a short time by the relatively permanent reduction in operating cost. Although the figures used as examples in this article cannot be properly applied directly to another mill, the methods followed in the investigation are the important thing and could be applied to any mill.

They Have Survived!

800,000 NEW ENGLAND COTTON YARN SPINDLES REMAIN IN ACTIVE MILLS

From TEXTILE WORLD'S *New England Office*

IT has been said that the NRA has given the cotton yarn mills of New England a "break." The answer to that one is that they deserve a break. With the mortality rate about 50% since the post-war boom, it is obvious that the plants still operating must have "a certain something." This is no place to throw flowers around, but the remark of one eastern yarn manufacturer is pertinent. He says "we have had to produce yarns that were better or different from most and then find customers who needed such yarns." Something of the sort must be true, otherwise no New England yarn mills could have survived the competition with other sections which produced excellent yarns with more advantageous hours and wages. Before plunging into the vital statistics, it is necessary to make a few explanations.

1. There are a number of cloth mills that have yarn for sale at times, but such mills are omitted from the list unless they have a large number of spindles consistently on sales yarn.

2. The term "liquidated" is used in the sense of the plant going out of the sales yarn business. Whether the spindles were actually junked or removed to some weaving unit is not considered.

3. Finished thread manufacturers are not covered—only thread "yarn" spinners.

4. There are several smaller units that have been omitted for the sake of brevity.

Following is an alphabetical list of the yarn mills of New England that have dropped by the wayside since 1921 and of those that have survived:

The Survivors

Acadia Mills, Lawrence, Mass., 60,000 spindles. Acadia was one of the big factors in mercerized yarn for the knitting trade in the early days, but of late the mill has concentrated on gassed and mercerized thread yarns and merino yarns.

Crown Mfg. Co., Pawtucket, R. I., 60,000 spindles. Although Crown's address is given as Pawtucket, the mill is actually just over the line in Massachusetts and, consequently, has been subject to the restrictions of Massachusetts' laws. Thread yarns account for about 50% of production. Started in 1912 with 15,000 spindles, the mill was built up to its present size in 1916-17-18.

Dana Warp Mills, Westbrook, Me., 56,000 spindles. As evidenced by its name, Dana has always specialized in warp beams for weaving. The plant is versatile, however, and, with a dyehouse, novelty yarn equipment, etc., stress has been laid on meeting unusual requirements.

Farr Alpaca Co., Holyoke, Mass., 70,000 spindles. Although primarily a cloth mill, Farr has about 50,000 spindles available for sales yarn and is thus a factor in the business. The yarn mill was erected in 1923 and was planned to supply the cotton warps for lining materials woven by the company. The rise of synthetic yarn linings put the spinning plant into sales yarn.

Fitchburg Yarn Co., Fitchburg, Mass., 60,000 spindles. Under the name "Sase," Fitchburg was undoubtedly the pioneer in the develop-

The Casualties

Dexter Yarn Co., Pawtucket, R. I., 21,000 spindles. This company was primarily a manufacturer of embroidery and crochet yarns. The trade-mark "Dexter" was sold to another concern, but the plant itself was liquidated in 1924.

Elizabeth Mills, Hillsgrove, R. I., 31,000 spindles. In its day the Elizabeth Mills had a reputation surpassed by none in the manufacture of combed and carded thread yarns. For years the mill bought its cotton in October, made its prices for the year, and allocated production among its faithful customers. The management decided to close the shop when price competition became intense and the plant was liquidated in 1926; stockholders receiving about 200%. The buildings are now used by a brewery.

Fairhaven Mills, New Bedford, Mass., 208,000 spindles. This huge plant was liquidated in 1926. Many of the spindles were modern and were purchased by other mills at bargain prices.

Grant Yarn Mills, Fitchburg Mass., 50,000 spindles. After several years of struggle, the mill was liquidated in 1928.

Holmes Mills, New Bedford, Mass., 69,000 spindles. The Holmes mill stands more or less intact and includes a dyeing and mercerizing plant, but the wheels haven't turned since 1931. There have been various rumors about someone

The Survivors

(Continued)

ment of spun rayon on a commercial scale. Over a period of time it is probable that over 50% of the active spindles run on "Sase."

Foster Spinning Co., Fall River, Mass., 13,000 spindles. A branch of a cloth mill, this unit has gone along on a fairly even course producing yarns for the thread and narrow fabric trades.

Kilburn Mills, New Bedford, Mass., 126,000 spindles. "Kilburn" has always meant something in the quality yarn field, but the outlook was rather dark for a time due to price competition. The No. 2 mill of 50,000 spindles was closed two years ago, but has recently been electrified and as much of it will be run as warranted.

Lawton Spinning Co., Woonsocket, R. I., 71,936 spindles. This mill has specialized in insulating, thread and knitting yarns in the order named; formerly had 125,000 spindles.

Lisbon Spinning Co., Lisbon, Me., 32,000 spindles. Concentrating on thread, tire-fabric and special yarns, this concern has gone along smoothly even during the last few years.

J. R. Montgomery Co., Windsor Locks, Conn., 15,000 spindles. By going into such fields as tinsel for pot scourers, about 45% of the product is now merchandised in other than textile lines.

Nonquitt Mills, New Bedford, Mass., 65,000 spindles. Although some looms have been installed, about 45,000 spindles are still available for sales yarn. Nonquitt has always specialized on the finer counts of threads, knitting and weaving yarns, and is now boosting spun rayon.

Shawmut Mills, Fall River, Mass., 30,000 spindles. Although various types of yarn are made, the emphasis is on thread yarns.

Quissett Mills, New Bedford, Mass., 80,000 spindles. Probably the most versatile mill of them all, Quissett has spun all kinds of cotton into all sorts of counts and has also gone in for spun rayon and novelty yarns.

William Clark Mills, (American Thread Co.), Westerly, R. I., 100,000 spindles. Although owned by a finished thread manufacturer, this entire plant is devoted to sales yarn. For years the output was practically confined to multiple-wound yarns for insulating magnet wire, but lately yarns for covering fine rubber have also been produced. Of the larger units, this mill averages to spin finer counts than any in the country; the average at times being finer than 100/1.

Total Surviving . 796,000 spindles

The Casualties

(Continued)

or other buying the plant and starting it, but, to date, nothing has come of it.

Indian Orchard Co., Indian Orchard, Mass., 21,000 spindles. This plant made a lot of specialties, such as yarn on beams, novelty yarns, spun rayon, fancy mixes, etc., but, despite a brave effort, it was sold to the Hodges Carpet Co. in 1931.

Manhassett Mfg. Co., Taunton, Mass., 33,000 spindles. Manhassett primarily was concerned with tire yarns. The *coup de grace* came in 1924.

Manomet Mills, New Bedford, Mass. It is difficult to differentiate between tire-cord yarn and tire-cord fabric, since the latter is not a fabric in the true sense, and manufacturers have been omitted from the list for the sake of clarity, but the history of Manomet is interesting and typical—318,000 spindles in 1921. Mill No. 3, 70,000 spindles, sold to Nashawena Mills in 1925. Mill No. 4, 115,000 spindles, erected in the post-war boom, sold to Firestone Rubber Co. in 1927. Buildings of Nos. 1 and 2 sold to New Bedford Rayon Co. Remaining spindles liquidated.

New Hampshire Spinning Co., Penacook, N. H., 14,000 spindles. The mill was established in 1836 and liquidated in 1930.

Orswell Mills, Fitchburg, Mass., 43,000 spindles. After being closed for some time, stockholders voted to liquidate in 1928.

Slater Mills, Pawtucket, R. I., 51,000 spindles. Plant liquidated in 1925.

Sharp Mfg. Co., New Bedford, Mass., 200,000 spindles. Despite the fact that the first unit of this mill was erected about 1910 and the second as late as 1916-17, liquidation took place in 1929 after various troubles.

Quiescent

Nyanza Mills, Woonsocket, R. I., 60,000 spindles. Nyanza has been closed for a year and a half, but may be started at any time. In the past, the plant featured specialty yarns, merino yarns and spun rayon.

Total Liquidated ....741,000 spindles (excluding Manomet and Nyanza)

RAYON Fabric Defects

DUE TO VARIATION IN SUPPLENESS OF YARN

By Alfred E. Sunderland

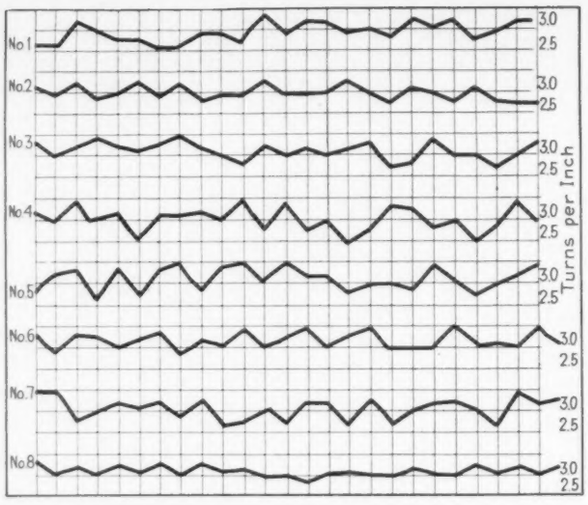


Fig. 1. Variation in twist of rayon yarn. Each square represents a continuous 10-inch length.

FAULTS in knitted and woven rayon fabrics are often due to a pronounced variation in twist in the yarn. Therefore it is important from the viewpoint of the knitter and weaver that every lot of rayon be tested for twist variation.

Twist tests should be made over a considerable length of yarn at intervals of every 10 in. As a rule, however, it is not necessary to test the whole length of a skein, because the defect usually can be detected as a regular variation every 30 or 60 in., say, depending on the size of the spool or skein used by the rayon manufacturer. Results of a series of twist tests are shown in Fig. 1.

Variation in twist is also accompanied by a corresponding difference in elongation. Unfortunately the machines generally in use for testing strength and elongation will not test a short length of 10 in.; but with a machine adapted to test such a short length, the result would probably demonstrate a difference in elongation properties, coinciding with the twist variation.

We have seen in a previous article (TEXTILE WORLD, November, 1933) that rayon is particularly susceptible to differences in tension. Therefore, if rayon is to be made universally applicable to all weaves, every effort should be made to develop twisting machines which will give a more uniform twist than is possible with equipment designed for silk or cotton. Again, it may be that the experience obtained in the use of tightly twisted rayon in the manufacture of crepe fabrics will develop a demand for a yarn with higher twist than the standard $2\frac{3}{4}$ turns now employed in the production of plain weaves. If a uniform twist could be obtained, the increase from $2\frac{3}{4}$ to 6 or 8 turns per inch would reduce considerably the stretch of rayon under the varying tensions of handling.

A property of rayon which is important, but which is seldom considered, is the suppleness, or wiriness of the yarn. The suppleness of rayon yarns affects their knitting qualities very considerably, and to a lesser extent their weaving and covering qualities. In knitting with different rayon yarns it is sometimes noted that on a short length of material one yarn gives a longer length for the same number of stitches. This was forcibly brought to the writer's attention on one occasion when he was making a shrinkage test on three different rayon yarns. The test was made by knitting one sample of yarn for 5 min. on a hosiery knitting machine; then knitting a colored dividing thread; after this, without any alteration in the tensions, knitting the next sample of rayon yarn for 5 min.; and finally knitting a second dividing thread and the third sample in a similar manner. The dimensions of the knitted samples follow:

Sample	A	B	C
Knitted length (in.)	$31\frac{1}{2}$	$31\frac{1}{2}$	$33\frac{1}{8}$
Knitted width (in.)	$4\frac{3}{8}$	$4\frac{1}{4}$	$4\frac{1}{2}$

Sample C has given 6% extra production. After wetting out and drying without tension, dimensions were as follows:

Sample	A	B	C
Knitted length (in.)	$36\frac{3}{8}$	$37\frac{3}{8}$	$39\frac{1}{2}$
Knitted width (in.)	$3\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$

Calculating total shrinkage from area of the knitted sample and that of the dried sample, we obtain the following:

Sample	A	B	C
Per cent shrinkage	14.2	9.2	13.9

These figures show that the difference in knitted length is not due to stretching of the rayon by excess tension on the knitting machine, but is an individual characteristic of the yarns definitely related to their suppleness. It should be mentioned that the yarns were tested for shrinkage before knitting and were found not to shrink at all when wet out and allowed to dry naturally. The results of this experiment may explain some of the erratic results obtained in finishing hosiery knit from the same lot of yarn.

In weaving, this difference in suppleness is one of the reasons for the variation in the appearance of plain-weave fabrics which shows up when a new bobbin is put in. In some cases, the difference is hardly noticeable, while in others it is so marked as to cause the goods to be rejected as faulty. This defect does not show as tight places or shiners; but the reflection of the light from the surface of the woven fabric is slightly altered, giving the goods a barré appearance. Dissection of the cloth shows no discernible difference in depth of shade of the dyeing, the fault being due to a difference in light reflection caused by the different lay of the threads.

Two general rules can be cited in closing: Do not try to get the maximum number of stockings or yards of cloth from a pound of rayon by increasing the working tensions; you can get the same result without danger by working within safe tension margins and using a lower denier. In weaving, allow ample reed space; many weaving faults are caused by improper balance between reed space, gray width, and finished width.

Twist and Strength . . .

TESTS INDICATE STRAIGHT-LINE RELATION BETWEEN COUNT AND CONSTANT

By Carl D. Brandt
Head of Textile Department
Texas Technological College, Lubbock

◆ *This is the first of two articles discussing various effects of yarn twist. One of the interesting results of Mr. Brandt's studies is an indication that the familiar twist formula—constant times square root of count—is unsatisfactory. In the second article, to appear in an early issue, he will propose a substitute.*

THE strength, elasticity, and appearance of a yarn are all more or less dependent upon the amount of twist which it contains. As single yarns are plied, further changes take place and the original qualities are altered. With the idea of determining just what some of these optimum conditions are, this work was undertaken. It should be fully realized that, as the various ply combinations are considered, the amount of testing becomes rather great; and therefore this work was limited to singles yarn and the various two plies made therefrom.

Another factor limiting the practical scope of the tests is the cotton fiber itself, as much depends upon its type, staple, and character. There is always a practical limit to the fineness of a yarn that can be spun from any given cotton. In order to avoid variables for which the raw material itself might be responsible, all the yarns used in this test were spun from one bale of cotton. Although the results here given apply directly to this one class of cotton only, the variations and tendencies indicated should have some general applications.

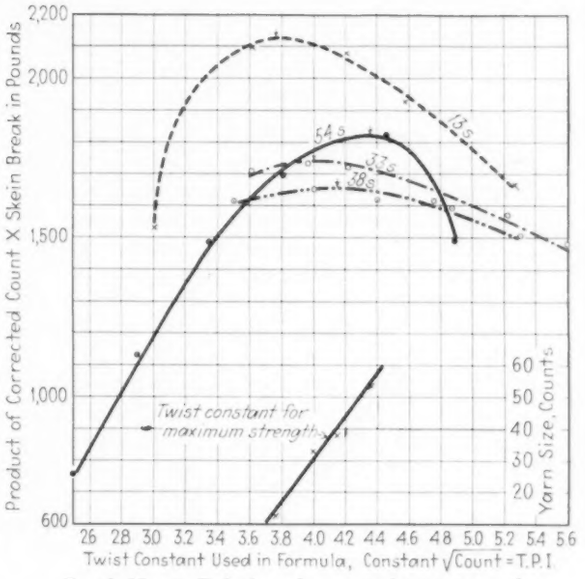
A thorough analysis of the fiber used in the spinning of these yarns is quite essential if at any time comparisons are to be made. The cotton was grown and ginned in the irrigated section of the Rio Grande Valley above El Paso, Texas. It classed middling, $1\frac{1}{8}$ in. On analysis a given sample of cotton, representing the entire bale, was found to contain the following proportions of the different lengths:

$1\frac{1}{8}$"	38%
1 to $1\frac{1}{8}$"	29%
$\frac{7}{8}$ to 1"	17%
$\frac{3}{4}$ to $\frac{7}{8}$"	12%
$\frac{1}{2}$"	4%

A statement of the approximate strength of the individual fiber might also be given, although it is generally recognized that this does not have a great deal of practical value. In this case the average of a large number of breaks was found to be 4.09 grams per fiber, which might appear to be a bit low; but since this was a rather fine, silky fiber and grown on irrigated soil, the value given is perhaps not far out of line.

The processes used in preparing the stock for spinning were as follows:

1. Vertical opener; 2. Breaker picker; 3. Finisher picker; 4. Card; 5. Drawing, two processes; 6. Slubber; 7. Intermediate; 8. Fine (2 sizes of roving, 4 hank and 6 hank); 9. Spinning: 13s from 4-hank; 33s and 38s, regular draft, from 6-hank; 54s, long draft, from 6-hank.



Graph No. 1. Relation of yarn twist to strength

After the spinning, the yarns were reeled and conditioned. Then, at the time of breaking, atmospheric conditions were noted and the actual breaks and sizings were corrected to standard conditions. The product of the corrected break times the corrected count was plotted directly on Graph No. 1. Each yarn size forms one curve of the upper group. The points of maximum strength are indicated by the small arrows. These indicated values were then plotted against the yarn count and the curve indicating "twist constant for maximum strength" obtained.

In the upper group of curves it will be noted that the product of the break times count decreased in the case of the 13s, 33s, and 38s as the spinning draft was increased. These yarns were all spun from double roving with drafts of approximately 6.5, 11, and 13, respectively. The 54s spun on the long-draft system with a draft of 18 proved to be a relatively better yarn than either the 33s or 38s. Another noticeable feature is the different manner in which twist affects coarse and fine yarns. In course yarns (13s) the first part of the curve—that is, up to the point of maximum strength—is quite steep, indicating that slight variations in twist per inch have a relatively great effect. Beyond this point excessive amounts of twist cause a lesser rate of change in the strength. The curve outline of the finest yarn, 54s, is exactly the reverse, the first part or increasing section sloping gently, while the drop is much more rapid.

The curve representing the twist constant for maximum strength turns out to be a straight line sloping up to the right. This means that the constant in the formula T.P.I. = Constant $\sqrt{\text{Count}}$ must be increased steadily as the yarn becomes finer if the strength of the yarn is to be kept at a maximum.

Full-Fashioned Sinking

REQUIREMENTS FOR SATISFACTORY LAYING AND KINKING OF YARN

By M. C. Miller, M.E.
Mechanical Engineer,
Manville, R. I.

THE phase of knitting which must be clearly understood before one attempts to understand the formation of selvages is the process of laying and kinking the yarn prior to its formation into loops.

Full-fashioned machines first kink the yarn successively between every two needles. There is one so-called jack sinker for every two needles, as shown in Fig. 59. This is not advantagous in so far as the knitting is concerned, but is a condition necessitated by mechanical limitations, as noted in preceding articles.

As shown in Fig. 59, the yarn carriers numbered 1, 2, and 3 (there being three or more at each end of the section, depending upon the type of machine) are traversed somewhat in advance of the actively kinking jack sinker. This advance of the carrier is known as the lead and may vary. Carrier 3, for instance, might be considerably to the right of the position shown and could also be to the left of the position shown, although no farther to the left than the amount indicated by the dot-and-dash position of this carrier in Fig. 59. That is, all carriers must lead the incoming sinkers enough to prevent the upper and forward-projecting end *a* of any jack sinker from commencing to come toward any carrier until the carrier has passed.

The maximum depth of yarn sinking *c* is limited in extent by the necessity of having a space *x* between the yarn throat *b* and the feeding yarn of the jack sinker 2, so that this sinker does not come in yarn contact with its throat *b* until the jack sinker 1 has reached the end of its movement between the needles. If the throat *b* of the incoming jack sinker 2 should contact with the yarn, it would place a tension on the feeding yarn and therefore interfere with the free feeding of the yarn to the sinker 1. While this would not interfere with the sinker 1 reaching the end of its stroke, it would prevent it from forming its proper length of kink, due to the needles on either side of it flexing an abnormal distance in the direction of the sinker stroke and in this manner shortening the kink. This is brought about by the extreme flexibility of the needles, particularly fine needles, which even normally, when the yarn is free to be kinked, flex slightly as kinks are being formed. This flexing is shown by the slightly off-set position of the needles that have yarn kinked around them at *g* in the plan view of Fig. 59. Any interference with free yarn-feeding will cause an excessive and uneven flexing of the needles. This, by varying the amount of yarn that is kinked between the needles, will cause an uneven appearance in the fabric.

To attain the clearance *x*, and at the same time to be able to form kinks of sufficient depth *c*, necessitates the lead *y* of one sinker over the other. This, incidentally, is why jack sinkers are used in place of sinkers having a direct cam action, as the distance *y* is in excess of the distance from center to center of the jack sinkers, necessitating therefore the use of a sinker-moving mechanism capable of moving the sinkers in advance of each other a considerable distance during the traverse of the sinker cam over the shorter distance between adjoining jack sinkers. It is necessary to have this high-speed sinker action only at the end of the sinker stroke over a distance of one jack-sinker spacing, as the sinkers preceding these kinking sinkers can have considerably less advance over preceding sinkers, as shown by the distance *y'*. This distance, while less than *y*, gives considerable leeway between the throat *b* and the feeding yarn, as shown by the distance *y''*. Sinkers preceding these can have even less lead over each other, as shown in Fig. 59.

The lead of the carrier and the particular carrier being used have considerable effect on the space *x* of the incoming jack sinker 2. For example, the carrier farthest removed from the beard side of the needles, shown in Fig. 59 as the carrier 3, considerably reduces this space *x* as its lead is lessened. Note, for instance, the effect of its dot-and-dash, or short-lead, position. On the other hand, if the carrier nearest to the needles, shown as carrier 1, is being used, an additional clearance *x'* is attained between the throat *b* of the incoming jack sinker 2 and the yarn. In any case, the jack-sinker cam or slur-cock action must advance each jack sinker to its maximum position between the needles without causing the following jack sinker to contact with the feeding yarn when the yarn carrier is in its shortest-lead position or when the carrier is close to the upper end of the throat *a* of the incoming sinkers. There must, in fact, be a reasonable clearance *z* between the edge of the carrier and the upper edge *a* of the incoming sinkers.

The angular surface *d* of the jack sinkers performs a very important function, as its purpose is to lower the feeding yarn to the correct height as it is being kinked between the needles. Such downward action of the yarn is particularly important after the carrier has stopped traversing and while the jack sinkers are continuing to take yarn, during which time the lead of the carrier over the incoming sinkers is reduced continually until the last jack sinker 16, Fig. 59, has kinked its yarn. The position of the yarn between, let us say, carrier 3 and this last sinker is as shown at *w*, or as shown at *w'* in the side elevation of Fig. 59.

The jack sinkers are higher at *a* than the dividing sinkers, due to the necessity for having the lower end of the carrier tube slightly below the yarn-taking end of the jack sinkers, to insure that the last active jack sinker, let us say 16, will with certainty engage the yarn. As

This article, although it is the second of a series on selvages, is in itself a remarkably clear and complete exposition of one of the most vital operations in the knitting of full-fashioned hosiery. The first article appeared in the November, 1933, issue, page 66.

an example, if the carrier tubes, instead of being placed low, as shown at *f* (side elevation of Fig. 59), were placed high, as shown at *f'*, it might well happen that the distance *f''*, or height of *a* above the feeding yarn, might not be sufficient, due to the jumping of the yarn or other irregularities, to permit the jack sinker 16 to engage the yarn with certainty and force it down the inclined surface of its throat *d*. While the low setting *f* aids the condition just noted, if excessive it might prove troublesome, for the reason that the lower or immediately underlying dividing sinker 16' (side elevation of Fig. 59) might engage with the yarn if it were in the position shown at *w'*. Therefore, the correct up-and-down setting of a carrier is somewhere between *f* and *f'*. Also, a slightly off-center setting of the carrier, in relation to the underlying dividing sinker 16', alters the condition just noted unfavorably, as will also an off-center setting of jack or dividing sinkers.

What is desired, of course, is to split the yarn clearance by varying the up-and down setting of the carrier so that the jack sinkers 16 will with certainty engage the feeding yarn, yet without endangering the yarn's engagement with the later-incoming dividing sinker 16', as it is intended in the carrier stoppage shown in Fig. 59 to have the needle 16 the last needle to have yarn kinked around it. If the divider 16' were to engage with the yarn, the needle to the right of needle 16 would have yarn kinked around it and so would seriously affect the formation of correct selvages.

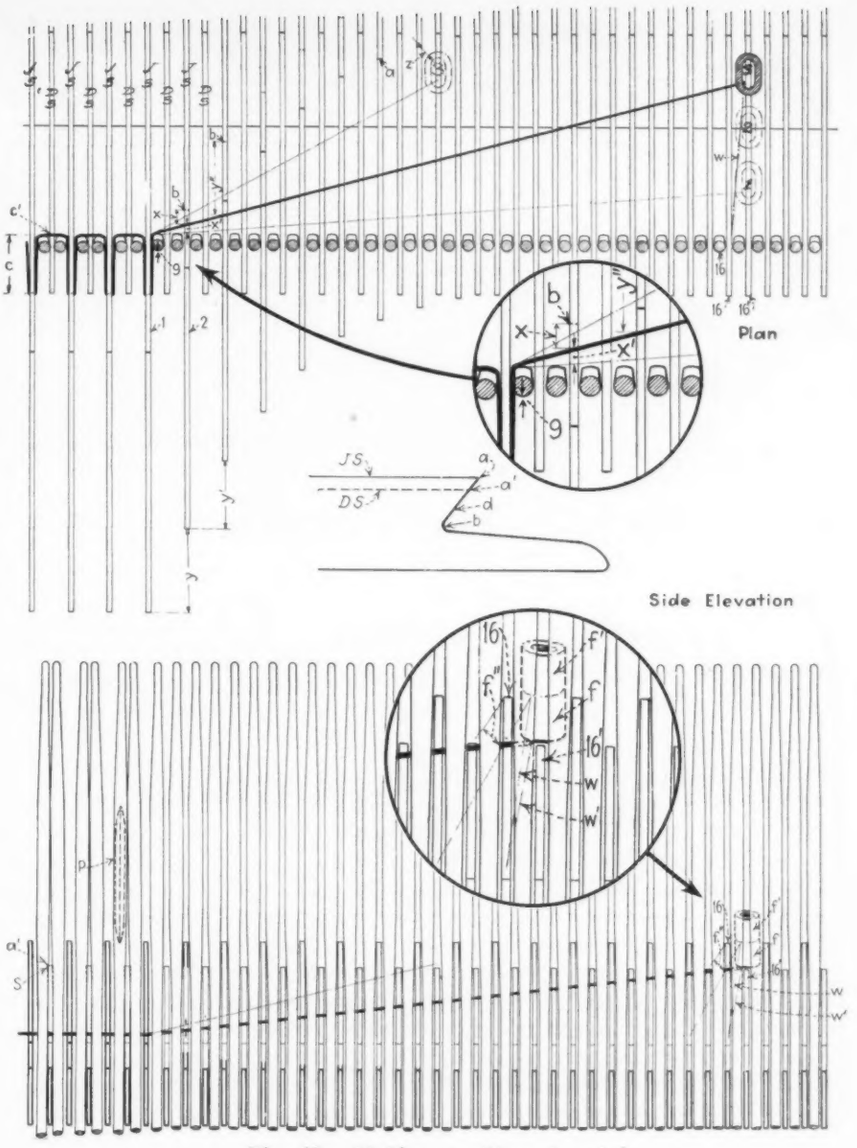
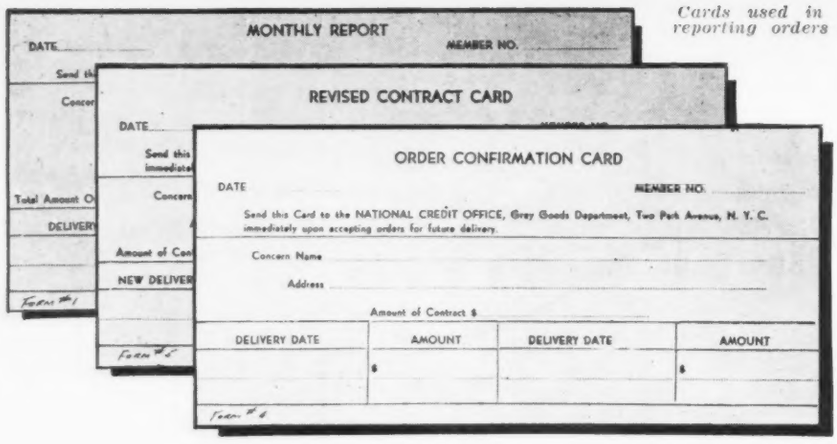


Fig. 59. Sinking, positions 2 and 3

It is assumed that the reader is familiar with the mechanics of sinker and carrier operation and understands that after the last active jack sinker, in this case sinker 16, has kinked its yarn, the dividing sinkers, one for every two needles, are brought toward the needles so that their throats engage with the straight bars of yarn *c'* and, by continued movement between the needles, evenly kink the yarn around each needle. The jack sinkers do not recede during this kinking action of the dividing sinkers; it is the needles that move slightly in a direction away from the incoming sinkers, giving up therefore the yarn required by the dividing sinkers, all as noted in preceding articles.

It is interesting to note that when the jack sinkers kink their yarn between each pair of needles, each pair of needles is flexed sideways until they come in contact with each other, as shown in the front elevation of Fig. 59. By examining this front-elevation drawing, it will be noted that when the needles are so flexed there does not appear to be enough space at *s* to permit the dividing sinkers to pass freely between the needles. This is readily possible, however, on account of the rounded edge that the needles present to the point *a'* of the incoming dividing sinkers. Because of the flexed position of the needles they cannot be drawn downward until after the point *a'* of the dividing sinkers has entered between the needles; for if the needles were drawn down earlier, their flared beard eyes *p*, shown dotted in one of the needles in front elevation in Fig. 59, would prevent the dividing sinkers from wedging themselves between the needles. After the point *a'* of the dividing sinker has passed the front line of the rounded edge of the needles, the needles are drawn downward and are realigned as the incoming sinkers finish their stroke, thereby preventing any slightly offset beard from crossing over an adjoining sinker.

It might be well, incidentally, to point out at this time that the reason the needles must be raised to what appears to be an abnormally high position prior to the jack-sinker stroke, is the fact that the needle eyes *p*, flared as they are, must stand above the incoming edge *a* of the yarn-taking throat of the jack sinkers, the needle shank being well rounded to permit each jack sinker to come properly between its needles, even though either the sinker points *a* or the needles are slightly off center or bent.



Cards used in reporting orders

SALES REPORTING SYSTEM TO

Curb Over-Buying

THE problems which of late have presented themselves in the rayon woven fabric industry, due to speculation, are being mitigated by the plan recently initiated to curb over-buying on the part of converters. The aim of the plan, in synopsis, is to establish intelligent regulation over all future contracts by keeping mills informed of customer obligations both direct and contingent through a daily system of telephone reports. The fundamental theory of the project is so broad in scope as to be applicable to many other textile divisions; indeed, there are indications already that it may be extended to other industries.

In effect since Dec. 1, 1933, the plan has been functioning now for more than two months, a sufficiently long time to permit of an interpretive analysis. Broadly it submits to three main divisions: First, the organic causes and aims; second, the machinery by which it operates; and third, the results to date.

With respect to the first aspect, the plan was evolved to correct numerous trade evils, long-standing in the rayon-greige-goods-converter relationship, but which became acute during the last year. Chief among these objectionable developments were: A pronounced trend to speculative advance buying by converters; a disorganized condition in the greige goods industry due to last-minute adjustments of orders; and a lack of adequate information among weavers as to the normal consumption expectancy of their customers.

Disproportionate anticipatory buying by converters had become so prevalent early in 1933 that it was no exceptional thing to find a company, capitalized at $50,000, allowing itself to accumulate a $200,000 inventory, with contingent liabilities in the form of $175,000 worth of future commitments still outstanding. Two strikes served to burst this speculative bubble and aggravated the situation to the point where the weavers found themselves compelled to act for their own protection.

A confidential reporting system embracing all sales made by greige goods mills to converters, and including all essential data on the customer's financial standing, average volume and consumption expectancy, was established. This system was organized by three groups, and is administered through a committee of three representing the respective groups as follows: Wm. Klopman, of Burlington Mills, for the National Rayon Weavers Association; Thomas B. Hill, president, Greyco Sales Corp., for the Greyco mills; and H. J. Delaney, credit manager of Meinhard-Greeff & Co., for the Greige Goods Credit Group.

The National Credit Office, New York, is the clearing-house for the data. The majority of mills selling greige goods to the converter are participating in this plan, and the cost to each mill is less than $50 annually.

Reporting procedure is simple. When the credit representative of a mill gets an order, he advises the National Credit office by telephone of the contract, and in return is informed of the customer's position, including total merchandise liabilities at the end of the month, and unfilled contracts to date. The Credit Office gives data only in dollars and only by telephone. This elimination both of sales details and correspondence serves greatly to reduce the chance of mis-use of data for sales promotion purposes.

Subsequent to the telephone call, the mill agent fills out a card, giving the amount of the order and delivery date, which card is sent to the Credit Office for its reference file. To further insure secrecy, code numbers are used on cards to identify mills. The mill agent later advises the Credit Office of any changes in the order such as cancellation, etc., or any change in delivery date. The reports keep mills informed as to customer outstanding liabilities on all invoices, thus indicating debtor status on stock either delivered or ordered.

90% of Industry Cooperating

The 55 mills cooperating in the plan represent 90% of those selling rayon greige goods to the converting industry. When the plan became effective, the mills supplied the Credit Office with all data available in their credit departments regarding the liability position and sales expectancy of customers to date. This confidential information plus the daily reporting system thus gives the mills a perpetual inventory of converter status. It should be emphasized, however, that in the operation of the reporting service, no effort is made to restrict sales; that is left entirely to the mill.

The groups sponsoring the plan agree that in the first two months it has proved itself of real value. Among the benefits cited as already achieved are: A reduction in over-buying by converters; improved credit and sales position of both greige goods mills and converters.

Possibly the biggest asset of the plan, however, is that it is establishing a new good-will between buyer and seller. Converters are cooperating in the movement with a spirit of helpfulness which bodes well both for the success of the plan and for future relationship between seller and buyer of greige goods.

IMPROVED TECHNIQUE FOR REPLACING

Twister Cylinders

By L. L. Kingsford

A PREVIOUS article (TEXTILE WORLD, February, 1933) dealt with a technique developed to remove twister cylinders—especially stubborn ones—with efficiency and dispatch. In this article the replacement of a twister cylinder will be discussed. The method can be used on any machinery which has cylinders, such as spinning frames, spoolers, etc. However, a twister cylinder is generally more difficult to handle than those on other machines, and this type has been selected to illustrate the technique.

First should be given one word of warning. Before actual replacement is started all parts subject to wear should be inspected and new parts substituted for any which are defective.

Heavy-duty cylinders, such as those on wet twisters, are keyed to the connecting shafts. Fig. 2A shows a connecting shaft *cs* with keys *k* used to couple two cylinders together; Fig. 2B depicts an end view of a cylinder and shows the keyway *kw* into which the key on the shaft is fitted. To facilitate fitting together of the key and keyway they should be placed in the position shown in Fig. 2B; a chalk mark *ch* is then made on the cylinder head over the keyway to serve as a guide to the eye.

Occasionally a new connecting shaft will prove to be slightly too large for the bore of the cylinder *br*, Fig. 2B. In such an event the repair man usually will file the shaft or the cylinder bore or both. A good job never can be done in this way. Rather, an expansion reamer should be used on the bore. In fact, when a new shaft is to be used, it is advisable to apply it to the bore of the cylinder before the latter is put into the frame. It is much easier to ream the cylinder head in an alley than to have to crawl under the machine to do it.

The farther end of the cylinder must be kept in its proper plane during the time that the matching of the cylinder keyway and key on the shaft is taking place. If there is a deviation from the straight line, either laterally or perpendicularly, a binding effect is produced which will retard the work of joining the parts as effectively as if the shaft were too large. To reduce the natural tendency of the cylinder to move out of line it is advisable to place a support under its farther end. A strip of wrought iron $\frac{1}{2}$ in. thick and 2 in. wide with its center concaved to fit the cylinder and its ends straight so that they can rest on the spindle rail will serve the purpose.

After the cylinder head and the shaft have been matched together, the center-bearing, *cb* Fig. 1, should be arranged in place, and the cylinder pushed against it. Next the cylinder must be backed off about $\frac{1}{8}$ in. The cylinder and shaft are then securely fastened together by means of the setscrew in the cylinder head.

The line of cylinders should now be turned by hand to ascertain whether or not the cylinder which has just been put into place is free from binding. The frame can also be leveled, and then the replacement cylinder can be checked for levelness in the perpendicular plane. A cord is stretched over all the cylinders on the frame and a thin slab of wood, say $\frac{1}{2}$ in. thick, is thrust under it at each end of the frame. A similar stick used as a gage is thrust in at different places along the line of cylinders, especially at the center-bearings, to note whether there is any unlevelness. Should it be necessary to raise or lower the cylinder, the amount required for proper adjustment can be effected with the perpendicular adjusting screw *ps* at the bottom of the bracket in Fig. 1.

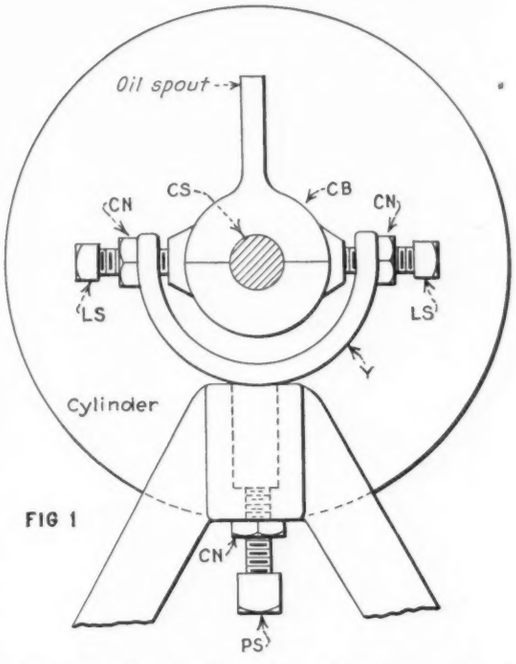


FIG 1

To ascertain whether there is any aberration of the cylinder in the horizontal plane a gage-stick is placed between the spindle rail and the edge of the cylinder on each side of the frame. If a variation exists, the lateral adjusting screw *ls* should be loosened on that side of the frame toward which the cylinder must be moved. The adjusting screw on the other side of the center-bearing yoke *Y* is then tightened, thereby forcing the bearing over enough so that the cylinder is in proper line.

Failure to tighten the two check-nuts at each of the lateral adjusting screws will result in a vibration of the cylinder shortly after the frame starts running. On certain types of frames it is sometimes impossible to get at the check-nuts without first moving the cylinders a sufficient distance apart to permit the introduction of a wrench. A wrench designed especially for use when cylinders have to be loosened and moved is shown at Fig. 2C. It will be noted that the handle is of the T-type.

After the bands or tapes are put in place, the center-bearings are lubricated, and the gear-end of frame is adjusted. The machine is now ready for a trial run. If the machine runs satisfactorily, the bobbins are put on the spindles, and the frame once again takes its place as a producing unit.

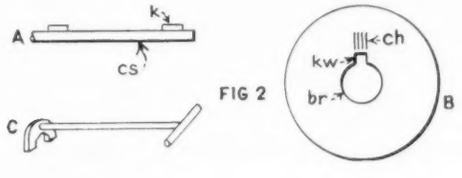


FIG 2

THE COLOR WEAVE AND OFFER WIDE

By T. R. Hart
Textile School
North Carolina State College

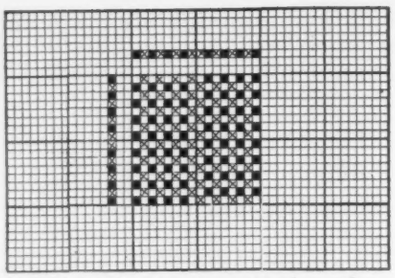


Fig. 1. Plain weave, reversing color

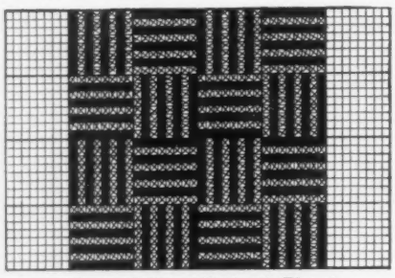


Fig. 2. Color effect of Fig. 1

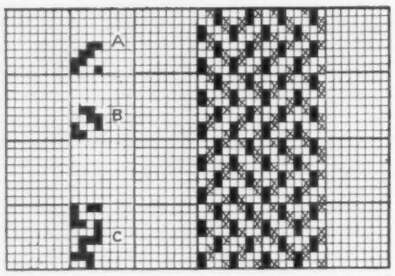


Fig. 3. A, right-hand twill. B, left-hand. C, motif

Fig. 4 Design based on motif of Fig. 3

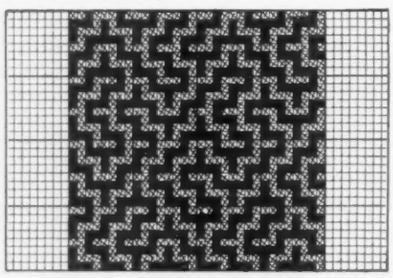


Fig. 5. Color effect of Fig. 4

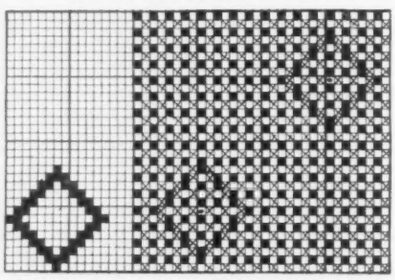


Fig. 6. Diamond figure

Fig. 7. Plain weave reversed on basis of Fig. 6

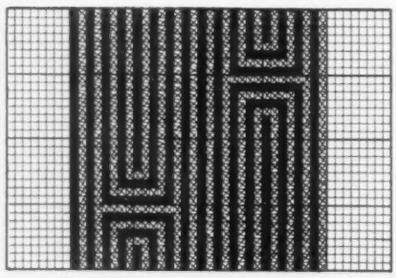


Fig. 8. Color effect of Fig. 7

◆ *A fascinating puzzle-game consists of taking two or more colors of yarn grouped in some repeating order in warp and filling and trying various simple geometrical weaves upon them with the idea of producing specific fabric effects. The often surprising results seldom bear a close resemblance to the weaves employed. It is a game, however, which offers extensive commercial possibilities to the designer, as Professor Hart points out in this article. He suggests a few principles to be followed in seeking certain effects.*

THE present popularity of shepherd's plaids and other small fancy effects for women's coats and sport suits should make an extensive study of color effects of particular interest at this time. Such a study will assist a designer in ascertaining the exact effect any weave or combination of weaves will give when warped and picked in a specified manner.

In order to make the color effect of any pattern, a designer should proceed as follows: First, select the weave or weaves to be used, the colors of warp and filling, and the order in which the colors are to be inserted. Second, put the weave or weaves on design paper, painting each end the color it is to be in the warp. Third, in all blank squares in the design, which indicate that the filling floats over the warp, paint the color of filling to be used.

Suppose that in Fig. 1 the solid squares represent black and the crosses represent white. Then it can be seen that this plain weave is warped one black, one white for eight ends and then one white, one black for eight ends. If the filling is inserted in a similar manner, the color effect shown at Fig. 2 will be the result.

In the wool trade fabrics of this type are usually made end and end and pick and pick; but in the cotton-goods trade, where pick-and-pick looms are not usually available, the same effect is obtained by using the two-and-two basket weave and warping and picking it two black, two white. This enables the pattern to be woven on a drop-box loom.

Fancy patterns formed by horizontal and vertical lines of color often prove very popular. One method of making such pattenrs is illustrated at Figs. 3, 4 and 5. It is well known that if the 2/2 or cassimere twill is warped and picked one black, one white, it will form step effects. When a right-hand twill is used, the steps rise to the left; and when a left-hand twill is used, they rise to the right. Patterns of this class are often made from motifs, and the procedure will be explained in detail.

In Fig. 3, *A* is a right-hand twill, *B* is a left-hand twill, and *C* is the motif from which the design will be made. Each square in the motif can be made to equal any multiple of the base weave; that is, 4x4, 4x8, or 8x8. In this case each square in the motif equals 4x4 in the design to be made. Consequently the design will be four times as large as the motif, or 16x32, which should be marked off on design paper. For every black square in the motif fill in *B* in a corresponding position in the design, painting each end the color it is to be in the warp. For every white square in the motif fill in *A* in a similar manner. The result will be the

PUZZLE

YARN-COLOR COMBINATIONS VARIETY OF EFFECTS

design shown at Fig. 4. In Fig. 5 are shown two repeats warp way of the color effect of this design.

By examining Fig. 4 it will be seen that this pattern can be woven on ten harnesses. Further investigation will reveal the fact that the number of harnesses required to weave any pattern of this type will be two more than double the number of ends in the motif. For instance, if an eight-end motif were used, the number of harnesses required to weave the resulting pattern would be 2x8 + 2, or 18 harnesses. As there are scores of small harness weaves which can be used as motifs, it is possible to weave a considerable number of different patterns on this principle.

Another method of producing color-effect patterns is by what is called reversing the plain weave. That is, an end will weave one down, one up for a number of picks and then one up, one down when the figure is made. By referring to Fig. 1 it will be seen that changing the order in which the ends intersect with the picks changes the lines of color from vertical to horizontal, or vice versa. By reversing the plain weave in this manner, many fancy patterns with diamonds, circles, and other figures can be made.

One method of making such designs is shown at Figs. 6, 7, and 8. Suppose a diamond effect is to be made with the spots in plain-weave order on 32x32. Decide upon the size of diamond to be made—as, say, seven-harness—and make a diamond similar to the one shown at Fig. 6. In this the floats are for only two picks, which will cause the ends inside the diamond to intersect with one color of filling and those outside the diamond to intersect with the other color. Thus horizontal lines of color form the figure, while vertical lines form the ground.

To make a design of this type with the spots in plain-weave order, divide the size of the design into four equal parts and put a mark in the center of alternate quarters or squares, as indicated by the circular dots on ends 9 and 25. These are to be the center of the spot. Then fill in the spots, painting each end the color it will be in the warp. Fig. 7 is the design obtained from using Fig. 6 in this manner, and Fig. 8 is the color effect of the design.

The sample of fabric shown at Fig. 9, which was woven by students in the Textile School of North Carolina State College, is an illustration of the effects which can be obtained by warping and picking various weaves in a specified manner. A loom beam was warped eight white, eight black throughout and the warp entered on a sixteen-harness straight draw. A pattern chain was built so that the filling would be inserted in the same manner that the loom beam was warped. The students then proceeded to try out various weaves by simply pegging new dobby chains.

Many of the effects which resulted can be woven on less than sixteen harnesses, but the idea was to see how many different patterns could be obtained from an eight-and-eight coloring in warp and filling. Figs. 10 to 17, inclusive, show the designs employed in the woven sample. Several of the effects shown can be made on six-and-six or ten-and-ten colorings by changing the foundation weaves so that they repeat on that number of ends.

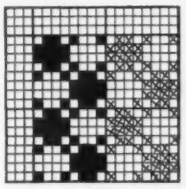


Fig. 10. Weave for effect A in Fig. 9

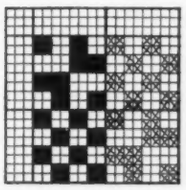


Fig. 11. Weave for effect B in Fig. 9

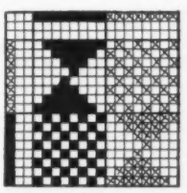


Fig. 12. Weave for effect C in Fig. 9

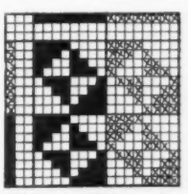


Fig. 13. Weave for effect D in Fig. 9

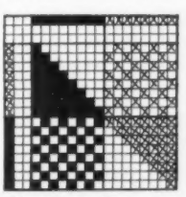


Fig. 14. Weave for effect E in Fig. 9

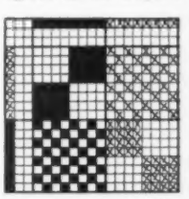


Fig. 15. Weave for effect F in Fig. 9

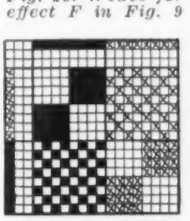


Fig. 16. Weave for effect G in Fig. 9

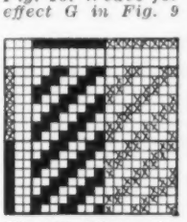


Fig. 17. Weave for effect H in Fig. 9

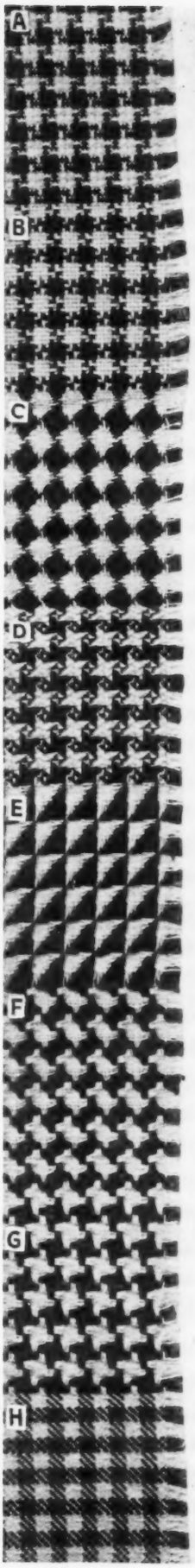


Fig. 9. Effects obtained by varying weave only

Financial Problems

OF TEXTILE MILLS TODAY

By Francis T. Lyons
President, Commercial Factors Corp.

◆ *The strain which the codes and processing taxes have placed on the financial structure of many mills has been a serious one. Despite the many beneficial effects of the New Deal, there have been coincidental problems which must be faced. In this article, Mr. Lyons discusses them frankly.*

A LARGE number of textile mills are badly handicapped right now by a serious lack of working capital. During a recent trip through New England and the South I heard that complaint from the treasurers of mills in all branches of the industry—cotton, wool, rayon, silk and knit goods. Many mills, as a result of this shortage of funds, are unable to benefit to the extent they should from the increased activity which the industry as a whole has been enjoying.

The need for additional working capital is brought about in the main by increased commodity prices, higher labor costs, and shorter hours.

Mill men seem on the whole to be in favor of the NRA. There has been an increased demand for their products which they attribute at least in part to the increased employment and purchasing power in other industries that have been brought under the codes. Also, they feel that there is a strong likelihood that prices will continue on a high level because of the strength of raw materials.

On the other hand the various stipulations of the codes have definitely increased the amount of money required for doing a given volume of business. For some mills 40% more working capital is required. For others the needed increase in working capital is higher.

These requirements come at a time when the working capital of many mills is at the lowest point for many years, having been depleted by several years of operating at a loss, and in some cases by bank closings that have tied up the mills' deposits. Furthermore, the usual sources of additional working capital—the banks—are in many cases unable to come to the rescue. Some of these are closed, and many of those which remain open deem it desirable to remain as liquid as possible—thus shutting off credit which in normal times they would be glad to extend.

Local banks which are in a position to know all about a mill's affairs are of course limited by law to lending 10% of their capital and surplus to any single borrower. Many banks in mill towns have already loaned up to their limit. And this limit is in many cases smaller than formerly because banks, too, have had inroads made upon their surpluses during recent years.

NRA acts in three ways to increase the amount of working capital requirements of a mill:

First, raw materials cost much more than formerly. One mill treasurer told me this. "The yarns we use," he said, "went from 12c. a lb. to 30c. a lb. We had sufficient cash to handle our present volume under the old, lower material costs, but now we cannot run steadily despite the fact that it is less difficult to get orders. We had to put every available cent into yarn and cut out every other expense possible."

Second, wage increases under NRA, like increased material prices, have boosted the amount of cash needed for payrolls and so result in more money being tied up in goods-in-process and finished goods inventories and eventually in accounts receivable.

Third, shortened hours result in an increased amount of working capital being tied up in inventory by reason of the necessity of commencing manufacturing of seasonal goods earlier than heretofore. Raw materials must be contracted for and taken in earlier, in order that goods may be made in time for the usual seasonal demand.

It is to be remembered that it is not alone the underfinanced weak sisters in the industry which are having trouble of the sort I describe. Here is an example that is typical of the difficulties which perfectly solvent and potentially profitable mills are experiencing:

This mill had orders on its books for more than $200,000 worth of cloth. It had contracted at very low prices for $80,000 worth of raw materials. These materials were coming in during the next 60 days, and must of course be paid for. But the cash available was only $25,000. Accounts receivable would probably be sufficient to take care of payrolls but not enough to meet bills for raw material. The mill's balance sheet was a good one. Under normal conditions it would warrant a larger line of credit—but evidently not today.

Aside from the cash item of $25,000 this mill had current inventory of $325,000 which was not excessive considering the volume of business it was doing, and accounts receivable, mostly on long terms, of $275,000 which also was in line with its business. On the other side of the balance sheet were accounts payable of $75,000 and bank loans of $200,000. The current assets were thus more than twice the current liabilities.

Yet, the mill was unable to obtain additional loans in spite of the orders it had on its books and regardless of the fact that the accounts receivable were probably 100% good and were being paid on time.

Obviously, unless this mill could promptly turn its accounts receivable, present and future, into cash it would find itself in an uncomfortably tight place. This, I want to emphasize, is not an isolated case. It is typical of many which I have encountered.

This shortage of working capital constitutes a real tragedy for many mills. After living through many years of lean picking, they finally have come to a time when orders are not so scarce and business can be obtained at prices that should net a nice profit—and then they find their operations hampered because they cannot adequately finance their raw materials and payrolls.

Fortunately, the seriousness of this financial problem is being recognized not only by the textile industry but by other industries, and constructive thought is being given in many quarters to ways in which fundamentally sound but temporarily embarrassed companies may be enabled to carry on. It is a situation which demands the utmost cooperation between manufacturers on the one hand, and banking, financing and factoring organizations on the other.

SIDE LIGHTS

ON AGEING

COTTON OR RAYON

Vat Prints

By Francis A. Newton

A FINE MUSLIN was being printed in a half-blotch pattern with vat colors; and as the fabric came from the ager, a bad case of "marking-off" was noticed. On another occasion a cotton damask with a fairly heavy selvage was being vat printed in a pattern which allowed for a white border around the colored design; and this time a smear of color was found all along the selvages. Faults of this nature due to improper ageing are all too common in printing cotton or rayon fabrics with vat colors. And they are particularly serious, because once the damage is done, there is little hope of remedying it. On the other hand, there are certain precautions which can be taken to avoid or prevent the recurrence of these defects.

Marking-off is especially troublesome in the case of light-weight fabrics, such as voiles and chiffons, since these goods have a tendency to crease during running. Use of moist steam is essential in ageing vats; and therefore the colors are inclined to become soft. When creasing occurs, the softened color is brought into contact with an unprinted portion of the piece, and marking-off occurs.

Marking-Off

In the case of the muslin mentioned above, however, no creasing had taken place. It was found, rather, that in order to lower the temperature of the ager, the operative had run a length of cold, slightly damp gray fabric immediately before the printed goods. As a result, the piece of vat-printed muslin immediately following the gray became much moister than was intended. The softened vat color came off on the ager rollers and was lifted by succeeding portions of the unprinted parts of the material. In addition, the tension on the cloth was excessive; and therefore the softened vat prints were pressed against the ager rollers to a much greater extent than was necessary. This in turn caused an even larger amount of the print color to adhere to the rollers, thence to be lifted by the cloth as described.

In the plant where this trouble occurred, it is now the practice to employ only warm dry grays for running in before the vat colors printed on light fabrics. Also, the tension has been somewhat reduced, and as little steam is used as is consistent with proper reduction of the vat color.

The marking-off on the selvages of the damask was brought about in a somewhat different manner. Here the fault occurred on a lot which had been run immediately after a batch of heavy vat colors. The fact that the smear of color was found only on the face of the piece proved that the damage was coming from some one roller; the very first roller in the ager was found to be coated with a deposit of color left from the preceding lot. It is probable the first roller at the entering end of the ager is most affected by the atmosphere and the comparatively cool material striking it. At any rate, this roller accumulated the deposit, even after a long period of running. To prevent this trouble it has proved necessary when running heavily printed patterns merely to enter the pieces in the ager in such a way as to bring the back of the fabric on the first roller. Another method of avoiding damage of this nature is through the use of a plain roller on the printing machine. The plain roller is of some advantage in removing superfluous color; however, injudicious use of this device may result in a serious loss of tinctorial yield and brightness of tone of the vat colors.

Perhaps the defect met with most frequently in ageing vat prints is unevenness of shade, especially in blotch styles. This unevenness sometimes takes the form of an all-over effect; that is, the color varies from one tone to another all over the pieces without any apparent regularity. In other cases, the first one or two pieces may be satisfactory, and thereafter there is a gradual tapering-off to much weaker shades on subsequent pieces. Some of the unevenness may be due to faulty color mixing; but a great deal of it is traceable to some irregularity in the ageing process. Several theories have been advanced to account for this irregularity; various attempts have been made to design vat agers in which uniform conditions can be maintained throughout a run; and numerous operating expedients have been tried to avoid this defect. Thus far, unfortunately, the problem has not been entirely solved.

There are times, however, when it is possible to locate the cause of unevenness or tapering-off and to apply remedial measures. For example, in one instance it was

noted that the colors were not coming up to expectations as regards tinctorial yield. Examination of the ager during running disclosed that it was not possible to get the pressure inside the chamber beyond a certain point, as indicated by the pressure gage on the outside. It was found that the mouthpiece had become very slack and was allowing much more steam to escape than was intended. This of course kept the pressure down and lessened considerably the amount of steam in the chamber.

In another case unevenness was traced to a faulty inlet valve to the coils which heat the water in the bottom of the ager. The packing in the valve had become loose, and consequently the valve worked very loosely on the steam. The result was that when steam was passing through, the valve tended to close of its own accord. During a run of vats this happened while the operative's attention was otherwise engaged; a fall in pressure took place inside the chamber; and the goods passing through the ager began to show a variation in shade. Frequent inspection of the ager to make certain that all valves and fittings are in the best possible state of repair is now a rigid rule.

Making Alterations

It sometimes is necessary to change the size of a steam pipe or to make some other modification in the ager itself. One thing often overlooked in this connection is that no alteration in any part of an ager should take place without making certain that some other portion of the machine does not need a corresponding alteration. The following is a case in point.

The steam supply in an ager had been increased to cope with certain heavy styles. This had been done by installing an inlet pipe ½ in. larger in diameter than was the original one. The larger pipe was found to give the desired increase of pressure as shown by the gage directly attached to the supply pipe. On the other hand, the gage on the side of the ager showed at times that there was no real increase of steam pressure in the body of the chamber. This was found to be due to the fact that the condensing pipe of the steam heating coils had not been increased to handle the extra condensation from the larger supply of steam. A longer time was required to drive out the larger amount of water lying in the coils and to bring the water in the bottom of the ager to the boiling point.

Finally, it should be mentioned that considerable information regarding the conditions to be observed in ageing any given style of vat prints can be obtained by running several sample pieces, each in a different manner. This practice will not solve all the problems encountered in vat printing, but it will help to avoid much of the damage due to improper ageing.

Night Temperature . . .

FIGURE TO BE MAINTAINED REQUIRES TEST

COLD weather has again made us question whether it is better to maintain the normal temperature in a mill over-night, or whether heating should be cut off or curtailed when the plant is idle. The problem would not be one of those hardy perennials if there were any easy and definite solution, but at least there are several general principles that should be taken into consideration in determining a policy to meet local conditions.

In a number of mills, particularly those handling fine counts and/or hard twists, the practice is to leave the humidifiers on all night, and even all week-end, perhaps setting the indicator down five points at quitting-time and moving it back an hour in advance of starting. Such mills obviously find it wise to maintain the temperature around 65-70° F. during the night.

In the next classification are mills that experience operating difficulties during the first hour or so of the morning. The air in a room may be up to normal, but machinery and yarn take more time to warm up. There are two solutions—either turn on the steam a half hour or so earlier to allow for a warming-up period, or keep the temperature up overnight. Different types of mill construction "leak" at different rates and the choice of a solution can only be determined by an actual test of fuel consumed—taking into consideration the quality of work produced in early morning. One school of thought believes in maintaining temperature whenever it is colder than 50° F. outside. In general, the more a building "leaks" the better the chances of a saving by shutting down the boilers. There is a common expression, "heating all outdoors," that fits the case. Unit heaters, which give a short warming-up period, are particularly suited to a "leaky" mill.

Where no operating difficulties are encountered in the morning hours, the individual mill must determine for itself, by test, whether or not it is cheaper to turn the steam on and off. In this connection care should be taken that all items of cost are figured. Particularly where fuel oil is burned, it is quite a jar on the heating system to be swung into action suddenly; the expensive brickwork of the boiler being especially susceptible to sudden changes in temperature. Some education of the fireman—more often admonition—concerning warming-up, helps. Another point to keep in mind is that it is seldom advisable to allow the interior temperature to drop below 45° F. under any circumstances.

If it is decided to turn off the steam at night, money can be saved by handling the problem by science rather than by guesswork. In the first place, it is possible to cut off the heat some time before the workers leave. This must be determined by test. In the second place, there is the problem of when the steam should be turned on again in the early morning. One plan is to have a recording thermometer outside and at least one inside. For each change of five degrees in outside temperature, observations should be made and a line on a chart, marked off horizontally in hours and vertically in degrees, should be plotted of inside temperatures. A little experimentation will then show at what hour the heat should be turned on again for any given outside temperature. Inside temperature should be checked against outside at nine and twelve at night and if the inside has dropped below the norm of the chart, considering the outside temperature, it is obvious that a wind has helped in cooling the building. In such cases the starting time should be advanced according to the judgment of the fireman—in any event probably not more than half an hour.

Spinning Room to Blame!

DEFECT IN WOOL REP TRACED TO POOR FILLING

By George Rice

AN imperfection appeared in some wool rep dress goods that one of the overseers referred to as being incapable of definition because of its shifty and uncertain character. The rep was a Charmelaine texture crossed with a twill, a type of weave which varies some with the yarns employed in its construction. There were 48 picks per inch and each of these floated over two warp threads, thus making the filling prominent. The importance of investigation before coming to a hit-or-miss conclusion as to the cause of a certain defect in fabrics is illustrated in this instance.

The finisher asserted that the defects were occasional stretches of soft, spongy filling threads and that they were probably the result of the weavers' steaming the filling to get the kinks out of it. The fiber in the filling had turned out to be longer than had been estimated, so that when the twist for a shorter fiber was put in, the wiry thread which resulted had to be steamed to prevent the excess of twist kinking the yarn during the weaving. The finisher claimed that the steaming was being unevenly performed and that the outer layers of some of the bobbins were being steamed to the point of softness. His investigation did not go beyond the steaming chest in the weave room.

The dyer interpreted the soft ends as tight ends which were off color because they were so taut in the fabric that they piece-dyed lighter in shade due to their inability to absorb the dye as readily as the ends resting at normal tension. His research for the cause extended no further. He was satisfied that the weavers were using fur, velvet, or other obstructions in their shuttles to prevent the yarn running out too freely and that the resulting tension caused the tight ends.

However, it was found that the spinning room was to blame.

When a new set of bobbins is placed on the spindles of a mule after doffing, the spinner is supposed to go along the line of spindles and gently drive the bobbins down into position with a hand block covered with leather. Some spinners are careless with this block. They strike so hard that a bobbin which happens to be a little full in its bore, or which happens to be placed on a spindle on which the packing is light, will be driven down so that its point will be below the point of the spindle, as shown at *A*, Fig. 1. The spindle will perform its work, but the thread will catch on this point, slip over at times during the twisting, recoil, tighten, slacken, and go through various maneuvers in its effort to receive the twist without entirely winding about the spindle tip and breaking. This end is spun at a disadvantage. Sometimes it seems to come to a dead stop so far as twisting is concerned, and then it will suddenly spin around to make up for lost time.

A number of ends like this were being spun in each lot on a mule which needed new spindle packing and on which an occasional bobbin with an abnormal bore or which was split happened to be used.

The ends thus handicapped were not evenly twisted. Soft places alternated with hard places at intervals ranging from 12 in. to the full stretch of the 72-in. draft of the mule. With the cause located, the evil was readily corrected by cutting off the old packing from the spindles, applying new packing, eliminating the defective bobbins, and instructing the spinner regarding the importance of keeping the points of all bobbins on a precise level with the tips of the spindles. If the packing is excessive or if it is wound too high on the spindles, there is danger of the heads of the bobbins splitting as shown at *B* when too hard driven in an effort to get their tips even with the spindle tips.

Fig. 1. Result of inadequate packing

Fig. 2. Result of excessive packing

Fig. 3. Piecing broken thread on soft roving

The kind of soft ends that disturbed the finished appearance of the wool reps might also have been produced by spinners who, in striving for production, were picking up soft ends of roving from the carriage tops and piecing them on to the corresponding spun ends after the carriages were well out. Both draft and twist are lost in this way. In some mills piecing up is prohibited except when the carriage is against the draft rolls and is stopped. But spinners get paid by the piece and nearly all will piece up at all times on the sly to make time, even when they know that soft ends result.

A good-enough splice usually is made, for the spinner grasps the twisted end from the top of the bobbin with the forefinger and thumb of the left hand and untwists its point a little so that it will receive and entwine with the end of the soft roving, which is picked up from the carriage top with the right hand. The joining is accomplished in the manner illustrated at *C*, Fig. 3. Some spinners reverse the positions of the hands in piecing up. But almost always there will be a yard or two of thread devoid of the amount of twist lost before the spinner discovered the break and while the piecing up is going on. A soft end will be made which might not be harmful in heavily napped goods but which would impair the looks of wool reps or almost any of the dress fabrics in which regularity is important.

In the first article of this series (Textile World, January, 1934) was given a general analysis of the textile processing industry as a whole. The organization of the various divisions under the Recovery Act is discussed in the present installment. A third article will take up the major problems of the cotton finishing and silk finishing branches.

Textile Processing

ORGANIZATION OF THE INDUSTRY UNDER THE NRA

By Winn W. Chase
Assistant Editor, Textile World

FORCED to organize in order that it might function under the NRA, the textile processing industry is in a far less chaotic condition than it was a few months ago. True, orientation is not yet complete, but steady progress has been made in forming the 2,000 and more parts into a smooth-running machine. We can best visualize the present structure of the industry and the rearrangements which are probable in the future if we first review briefly the steps taken by the major divisions in working out this organization and in formulating the various trade-practice codes under which they are operating.

When the Recovery Act was passed, the cotton finishing industry, with two well-established trade associations, was by far the best organized of any of the branches. Of a total of 122 companies classified as mill and corporation finishers, 106 were members of the Cotton-Textile Institute; and these went under the code for the cotton textile industry which became effective on July 17, 1933. The National Association of Finishers of Textile Fabrics comprises 16 mill and corporation finishers, together with 68 out of a total of 91 job finishers. This group operated temporarily under the cotton code from July 31 to Nov. 8, when it was amended to include the cotton finishing industry as represented by the above-mentioned finishers' association. Thus, virtually all finishers of cotton piece goods—including those engaged also in finishing woven fabrics composed in whole or in part of rayon or other synthetic fibers—are operating under the cotton code.

In the spring of 1933 the silk finishing industry was split up into five associations—only four of which were active; and in addition, there were a number of concerns which had no trade affiliations. In June each of the four active organizations sent a committee to Washington, and these committees met jointly with officials of the NRA. The various factions were so far apart from one another in their viewpoints that they were advised to compose their differences before making further attempts to formulate a code.

By the middle of July a satisfactory basis of agreement had been reached; the four organizations, together with several firms previously not members of any association, brought together in the Institute of Dyers & Printers; a code committee appointed; and a code drafted. Pending a hearing on this code, the President put into effect a temporary code on July 24. The hearing was held on Nov. 10; and the code for the silk dyeing and printing industry became effective on Dec. 25.

In the previous article it was shown that dyeing and finishing of wool goods, hosiery, and underwear—unless these processes are carried out on a commission basis—are usually considered to be a part of the manufacturing operation. With the exceptions to be noted later, the organization of these branches under NRA follows:

1. Finishers of woolens and worsteds under code for Wool Textile Industry submitted by the National Association of Wool Manufacturers, and made effective on Aug. 14, 1933.
2. Dyers and finishers of hosiery under code for Hosiery Industry submitted by the National Association of Hosiery Manufacturers, and made effective on Sept. 24, 1933.
3. Dyers and finishers of underwear fabrics under code for Underwear Industry submitted by the Underwear Institute, and made effective on Oct. 2, 1933.

It was also shown in the previous article that in many instances the processing of raw stock, tops, and yarn is but one of the steps involved in the manufacture of a finished fabric and cannot logically be separated from the manufacturing operation as a whole. For example, a manufacturer of knitted outerwear may dye the yarn which he himself uses in knitting the fabric, or a wool goods manufacturer may dye raw stock which he himself spins and weaves. In the first case the processing of the material is carried out under the code for the Knitted Outerwear Manufacturing Industry; in the second, under the code for the Wool Textile Industry.

Likewise the several codes under which various types of sales yarn are manufactured cover also the processing of these yarns, unless it is carried out on a commission basis. That is, mill dyers of woolen and worsted sales yarn are under the code for the Wool Textile Industry; mill dyers of cotton yarn and mercerizers of cotton yarn—as represented by the Mercerizers Association of America—under the code for the Cotton Textile Industry.

We have next to consider several groups—most of them comparatively small in size, and until recently having no semblance of a central organization. In order to coordinate these various divisions, the National Textile Processors' Guild, Inc., was formed in June, 1933; and this organization by the end of July had drawn up and submitted a trade-practice code. Pending a hearing on the code, held in Washington, on Nov. 15, this section of the industry was granted a modified P.R.A. On Feb. 5, 1934, the code for the Textile Processing Industry as represented by the Guild became effective. Groups functioning under this code include the following:

1. Job dyers of cotton raw stock.
2. Job dyers of wool raw stock.

3. Job bleachers and dyers of worsted tops.
4. Job bleachers and dyers of wool yarns.
5. Job bleachers and dyers of cotton yarns.
6. Job dyers of rayon yarns.
7. Job dyers and finishers of knitted textile fabrics.
8. Job dyers and finishers of hosiery.
9. Job mercerizers of cotton yarns.
10. Job dyers and finishers of wool goods.
11. Job glazers of cotton yarns.

Also included in the National Textile Processors' Guild are several other divisions, the members of which are engaged in winding, warping, beaming, twisting, and converting of yarns, and other operations not ordinarily thought of as textile processing.

A number of other sections of the processing industry have aligned themselves with established associations and are operating under various textile codes. Following is a list of these groups:

1. Dyers and finishers of cotton sewing thread, as represented by the Thread Institute, under code for the Cotton Textile Industry.
2. Dyers of silk yarn under code for Rayon and Silk Dyeing and Printing Industry.
3. Dyers and finishers of silk and rayon sewing thread and floss under code for the Silk Textile Industry.
4. Dyers and finishers of silk and rayon ribbons and hat bands under code for the Silk Textile Industry.
5. Dyers and finishers of wool felts under code for the Wool Felt Manufacturing Industry as represented by the United States Felt Manufacturers Institute.

Two groups engaged in textile processing are divisions of the Rubber Manufacturers Association, Inc., and have elected to operate under the code for the Rubber Manufacturing Industry which became effective on Dec. 15. These are:

1. Proofers and backers of automobile fabrics.
2. Processors of rubberized, waterproof cloth and oiled fabrics.

Other groups have formed independent organizations and have submitted individual codes, none of which had been approved at the time this article went to press. These associations include the following:

1. Canvas Waterproofers' Association.
2. Rug Chemical Processing Association.
3. Institute of Book Cloth and Impregnated Fabrics.
4. Sanitary and Waterproofing Specialties Manufacturers Assn.
5. The Window Shade Institute.
6. The Pyroxylin Coated Fabrics Association.
7. The Cordage Institute.
8. National Textile Finishers Association.
9. The Narrow Fabrics Committee.

There still remain a few sections of the processing industry which to our knowledge have not formulated codes. Among these are finishers of linen thread, yarn, and fabrics; processors of jute and hemp; etc.

The accompanying chart showing the present organization of the processing industry under the NRA emphasizes that in many cases there is overlapping of code authority. In some cases this overlapping is more apparent than real; in others, the conflict is serious.

For the regulation of the 33 divisions of the processing industry shown in the chart, 11 codes are now in effect; 9 more have been submitted. About half of the processes classified are carried out in two or more branches. In many cases individual companies processing various classes of material are governed by several codes.

Steps taken thus far toward organization of the industry—commendable as they are—can only be considered a beginning. Further centralization of authority is, we believe, as inevitable as the need for it is evident.

How will this centralization be brought about? How far will it proceed? How quickly will it come?

There are no categorical answers to these questions. At most, we can only make conjectures, bearing in mind that the processing branches are linked inexorably with the manufacturing branches and that the textile industry as a whole is no longer composed of a number of major divisions each distinct from the others. It appears then that the impetus to centralization will come both from within and without—from leaders in each branch and from the government. First will come the amalgamation of groups whose interests are in common—for example, the affiliation of the silk and rayon dyers and printers with the silk and rayon weavers; later we can visualize one master textile code comprising all divisions of the industry. The initial moves toward coordination have already occurred; complete centralization may be delayed for years or it may come much sooner than any of us fear or hope, depending on our point of view.

Present Organization of Processing Industry Under NRA	Cotton Textile Industry	Rayon and Silk Dyeing and Printing Industry	Textile Processing Industry	Hosiery Manufacturing Industry	Underwear Manufacturing Industry	Outerwear Manufacturing Industry	Wool Textile Industry	Silk Manufacturing Industry	Carpet Manufacturing Industry	Cordage Industry**	Rubber Manufacturing Industry	Canvas Waterproofing Industry*	Wool Felt Industry	Rug Chemical Processing Industry**	Book Cloth Manufacturing Industry**	Window Shade Manufacturing Industry**	Sanitary and Waterproofing Specialties Mfg. Industry**	Pyroxylin Coated Fabrics Manufacturing Industry**	Narrow Fabrics Industry**	Textile Examining, Shrinking and Finishing Industry**
Cotton Piece Goods Finishing	×																			
Cotton Yarn Dyeing	×																			
Cotton Yarn Mercerizing	×		×																	
Cotton Yarn Glazing	×		×																	
Cotton Thread Finishing	×																			
Cotton Raw Stock Dyeing	×		×																	
Canvas Waterproofing	×											×								
Silk Piece Goods Finishing		×																		
Silk Yarn Dyeing		×		×																
Silk Ribbon Finishing								×												
Silk Thread Finishing								×												
Rayon Piece Goods Finishing*	×	×																		
Rayon Yarn Dyeing*			×	×																
Rayon Ribbon Finishing*								×												
Rayon Thread Finishing*								×												
Wool Goods Finishing			×				×													
Wool Yarn Dyeing			×			×	×		×											
Wool Raw Stock and Tops Dyeing			×				×		×											
Wool Felt Processing													×							
Rug Chemical Processing									×					×						
Hosiery Dyeing			×	×																
Knitted Underwear Processing			×		×															
Knitted Outerwear Finishing						×														
Knitted Wool Goods Finishing			×				×													
Cordage and Twine Finishing										×										
Automobile Fabrics Proofing											×									
Rainwear Processing											×									
Specialty Fabrics Waterproofing											×						×			
Book Cloth Processing	×														×					
Shade Cloth Processing	×															×				
Pyroxylin Coating of Fabrics																		×		
Narrow Fabrics Finishing																			×	
Fabric Examining and Shrinking																				×

*Including other synthetic fibers. **Code not yet approved.

TENSION CONTROL IS IMPORTANT IN

Tentering Glove Silk

By T. P. Sheridan

◆ *In a previous article* (TEXTILE WORLD, *Nov., 1933*) *the author outlined the various operations involved in finishing glove silk. He now discusses in more detail the tentering of these fabrics.*

FLAT frames employed for drying glove silk are not unlike the home lace-curtain frames in shape, with pins fastened to the four sides. In length they are anywhere from 60 to 90 ft. The width is adjustable. One side is mounted on rolling legs, and is adjusted to the desired width by a mechanical arrangement which permits a man to turn a crank at one end, making the frame any width from 30 to 120 in. The other side is stationary, as is one end. The movable end is merely a bar, fitted with pins, which slides along the top of the two sides. This bar has a cable attached, which spools up on a large winch when the bar is being adjusted.

A smaller winch extending from the side of the larger one also has a cable attached, which spools and unspools as adjustments are made. The cable from the smaller winch is passed through a pulley hanging from the ceiling and has an attachment at the end to receive slotted weights. When the end bar is pulled along the frame to get the required yardage from a piece of cloth, the cable winds up on the smaller winch and, when weights are placed on the end, serves as a check to the larger winch. In this way the cloth is held to the length desired; but, at the same time, free action is allowed and, likewise, straining prevented.

The necessary number of weights are applied to the end of the arresting cable to hold the cloth to its length. The sliding bar is not checked completely, however, but is allowed to slide down the frame gradually as the operators pin the edges of the cloth to the sides; that is, the bar is arrested only sufficiently by the weight tension to produce the standard yardage when the piece is completely pinned on the frame. In this way, no matter whether the piece be tightly or loosely woven, it can be kept to a standard quality and yardage.

Precautions Necessary

The operators first pull the piece to the required length, then start at the stationary end of the frame and pin the piece to the sides at 3 to 4 ft. intervals, working directly across from each other. Since the cloth is in full view, it is easy to keep the wales straight and parallel to one other. When the piece has been entirely fastened in this way, the operators again return to the stationary end and carefully pin on the whole edge of the piece. If crookedness in the wales occurs, it can be readily corrected. The frame is then adjusted to the desired width; the piece allowed to dry in a hot, well-ventilated room.

The pieces should be placed on the frame and dried one at a time. Some dyers may perhaps entertain the notion of drying one piece on top of the other to save time. This idea is a false one. Not only will one piece retard the drying of the other, and make the drying time about the same as if two pieces had been dressed one at time, but there will be the danger of the finishing substance running down into the lower one, leaving hard spots when dry. This condition would necessitate redressing and, possibly, redyeing.

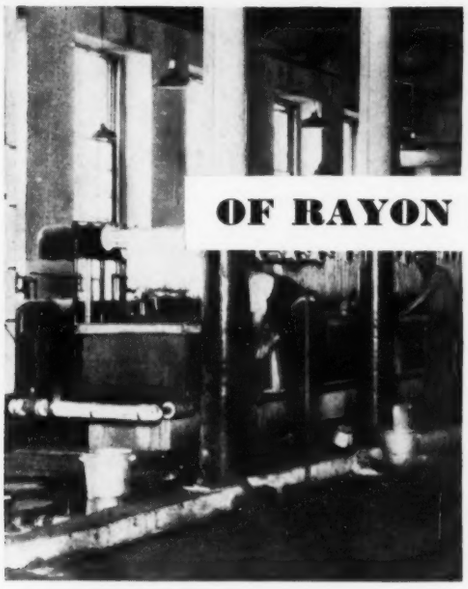
Power Tenters

There are several makes of power tentering frames on the market, manufactured especially for handling glove silk. In preparing the goods for finishing on a power tenter, all the pieces in a batch are first sewed together by machine, end to end. After dyeing, it is often necessary to dry the pieces and before sewing. The batch is then passed through the finishing bath, extracted, and rolled tightly on a large roller. This roller operates on brackets at the feeding-in end of the tenter. The end of the cloth is fastened to a bar which fits in slots on the moving part of the machine. The machine is then started; and an operator at either side of the machine places the edge of the cloth on the moving pins. The frame is kept narrow at the feeding-in end, and adjustments are made to give the desired width as the pieces move along. The goods enter one end of the machine in the "damp" and are taken from the other end finished.

One of the chief difficulties met with in power tentering is in finishing to a standard yardage without breaking or splitting of the fibers. This is particularly true when a screw tension device is employed. If the tenter is equipped with a weight tension device, there is little danger of damage to the goods, but it is difficult to obtain the standard yardage.

For example, it seems that if a given tension is placed on the tenter frame roll, and two pieces of milanese of the same weight and construction are framed, both should dress to the same yardage. However, if one piece came from a knitting machine which is producing a tight cloth, and the other piece from machine giving a loose fabric, one piece will finish several yards longer than the other.

Another difficulty is in keeping the wales of the cloth straight and as parallel to one another as possible. In operating a tenter, one operator works at each side of the machine and fastens the edges of the cloth to the moving pins. If one of these operators is a little slower in pinning than the other; or if he unconsciously misses a pin now and again, in the finished piece the wales will be at various angles.



Skein Dyeing

OF RAYON FOR USE IN INGRAIN HOSIERY

By W. H. Hand

RAYON YARN used in the manufacture of ingrain hosiery may be dyed either in skein dyeing machines or in hand tubs. Direct, developed, sulphur, and vat colors are the four classes of dyestuffs most commonly employed—the choice being governed largely by the fastness requirements of the dyed yarn. That is, direct colors usually are satisfactory when the hosiery is not to be cross-dyed; developed and sulphur colors are often employed when cross-dyeing is necessary; vat dyes are recommended when the goods are to be bleached with peroxide. In this article will be described some of the methods which the writer has found to give satisfactory results both in machine and hand dyeing.

In preparing skeins for direct dyeing, they are removed from the cases and hung on the rollers of the machine (or on dye sticks, if the hand tub is used), care being taken to avoid crowding and to have the same amount of yarn on each roller. The vat is filled one-third full of clear, soft water, and brought to a boil. If only hard water is available, 1% of trisodium phosphate is added, together with 2 to 4% of a suitable penetrating agent. The dyestuff, previously dissolved and strained, is poured in; boiling continued for 3 to 4 min.; the steam turned off; and cold water run in to bring the bath to the correct volume, usually 8 in. from the top of the vat. The goods are now entered into the bath; the liquor is again brought to the boil and allowed to boil gently for 15 min. At this time the necessary amount of salt is added, and dyeing continued at the boil for another 20 min. When the desired shade is obtained, the dye liquor is run out and fresh warm water run in. About 2% of a good softening compound is added, and the yarn rinsed for 5 to 10 min. The dyed yarn is now removed from the machine, extracted, and dried. The chief precautions necessary are to use level-dyeing colors of the required fastness, and to keep the yarn turning throughout the dyeing operation.

Developed Colors

Developed colors are applied in the same manner as the direct dyes. The yarn is rinsed in warm and then cold water. The color is next diazotized for 15 min. with a cold solution of sodium nitrite and hydrochloric acid, the yarn rinsed with cold water, and the color developed for 20 min. in the usual manner with beta naphthol or another suitable developer. Following development, the yarn is given two warm rinses, 2% of soap being added to the first rinse bath and 2% of softener to the second.

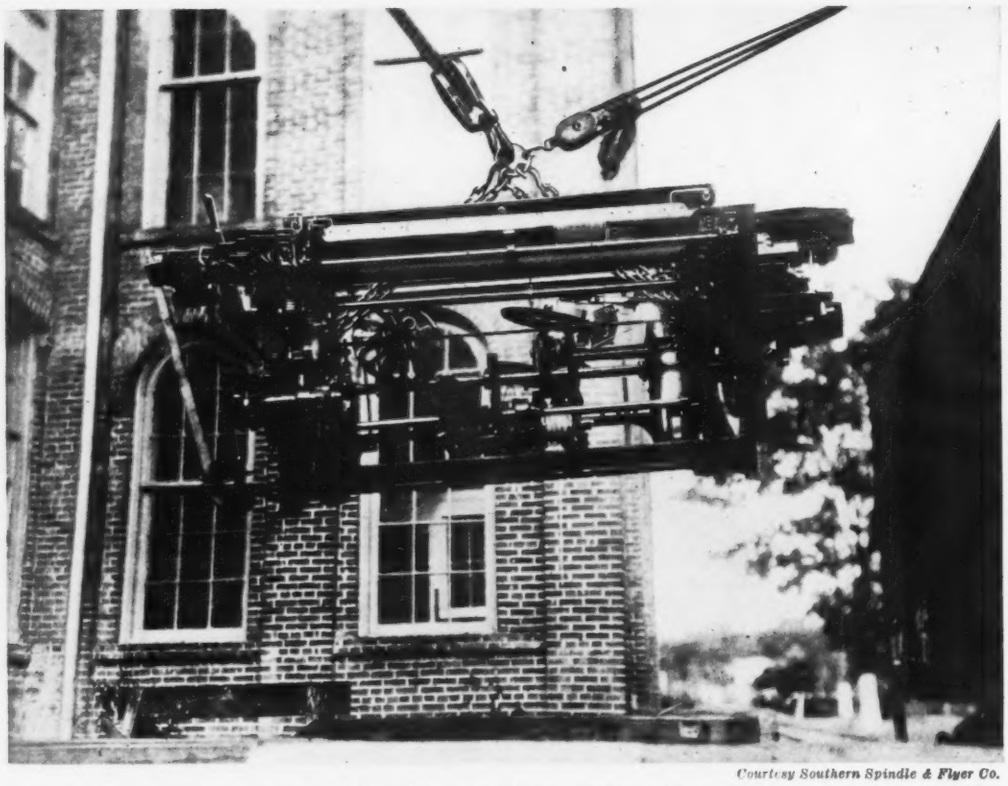
Dyeing of sulphur colors is carried out by entering the yarn in the dyebath previously brought to the boil and containing the dyestuff dissolved with sodium sulphide and soda ash. At the end of 10 min. of dyeing at the boil one-half the required amount of salt is added; and at the end of another 10 min. the remainder is stirred in. Dyeing is continued for 25 min., a sample taken, and the liquor drained off when the correct shade has been obtained. The yarn is given four 10-min. rinses—the first with cold water, the second at 150° F., the third hot with the addition of a good neutral soap, and the last with 2% of a softener.

For dyeing sulphur blacks, a standing bath is usually recommended. A typical formula for the first bath is 12% sulphur black, 12% sodium sulphide, 4% soda ash, 30% common salt, and 2% penetrating agent. For the second bath the quantities employed are reduced to 10% dyestuff, 10% sodium sulphide, 3% soda ash, 20% salt, and 2% penetrant. The third bath consists of 9% dyestuff, 9% sodium sulphide, 3% soda ash, 15% salt, and 1% penetrant. The fourth bath calls for 8% dyestuff, 8% sodium sulphide, 3% soda ash, 10% salt, and 1% penetrant.

Vat Dyeing

Vat dyeing presents a number of problems which can be solved only by experience; but the following hints should prove of value. First prepare the yarn for dyeing by scouring it with 3% of neutral low-titre soap and 1% of trisodium phosphate (or other good scouring compound), rinse, and extract. Reduce the dyestuff with sodium hydrosulphite and caustic, and add it to the dyebath made up to correct volume and brought to the temperature recommended for the particular dyestuff employed. Be certain that temperature is maintained at correct point throughout the dyeing operation—usually about 1 hr. When the correct shade is obtained, drain off liquor, rinse yarn in warm water, oxidize shade with solution of acetic acid and sodium bichromate (or peroxide or perborate), again rinse with warm water; rinse warm with soap and soda ash, and again with warm water.

In drying rayon it is essential that neither the speed or temperature be too high. Yarn dried slowly and at low temperatures will have a softer feel and make a better looking stocking than that dried too quickly and at excessive heats. After the yarn is thoroughly dry, it should be oiled with a suitable lubricant for knitting yarns, extracted until nearly dry, and wound on cones.



Courtesy Southern Spindle & Flyer Co.

Loom, with magazine attached inside, being swung from platform, for raising to second floor of mill

If Moving Day Comes—

ACCEPTED METHODS FOR SHIPPING TEXTILE MACHINERY

WE never saw statistics on the amount of textile machinery moved in any one year, but our guess is that it comes to a considerable figure. Unlike the periodic migrations of our population, seen in some parts of the country, there is no particular season for textile machinery moving. Whenever done, it should be well planned and expeditiously carried out. Loss of production on the machinery concerned is a part of the cost of moving it, unless it is going into dead storage. Speed in dismantling, shipping and setting-up goes hand-in-hand with need of effective care against damage.

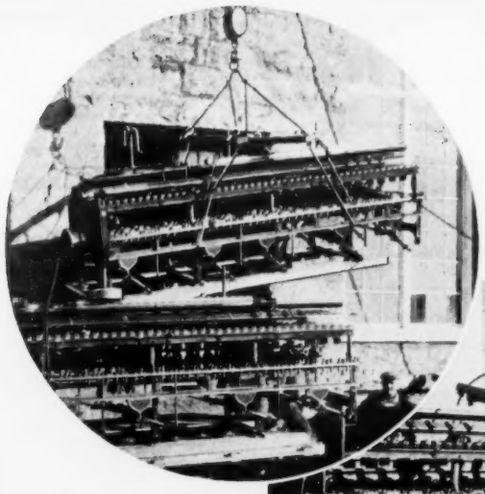
There are plenty of good reasons for moving, but with few exceptions they boil down to the hope that the machinery will make more money for its owners in the new location than in the old. This holds whether the machinery is moved about on the same floor or shipped to a new location 1,000 miles away. Realization depends on the wisdom of the plan behind the move, but well-engineered details are vital helps toward the objective.

There is no general formula to apply to the moving of textile machinery, but experience has shown that certain practices as to skidding, crating, etc., have worked out successfully in the handling of numerous jobs. To a certain extent practices are modified in accordance with the distance to be travelled and the manner of shipment. If the move is to be made by motor-truck within say 150 miles, the problem differs from that of moving perhaps 600 to 800 miles by freight car.

As indicated, the two standard methods of preparing a machine for shipment are skidding and crating. Lest there may be confusion in definition, let us say that skidding consists of attaching the base of the machine to suitable timbers (their length running with the longest dimension of the machine) so that it may readily be moved by dragging or pushing over rollers. Crating is in effect an additional step, since in addition to the firm foundation under the machine a framework of suitable lumber is built up around and over it. It is almost always impossible to stack skidded machines one on the other, whereas crated machines may be so piled where economical use of shipping space makes it desirable, as in freight car or in the hold of a ship. For motor-truck shipment, skidding is usually sufficient. Small parts and accessories are usually placed in boxes which accompany the shipment of machines.

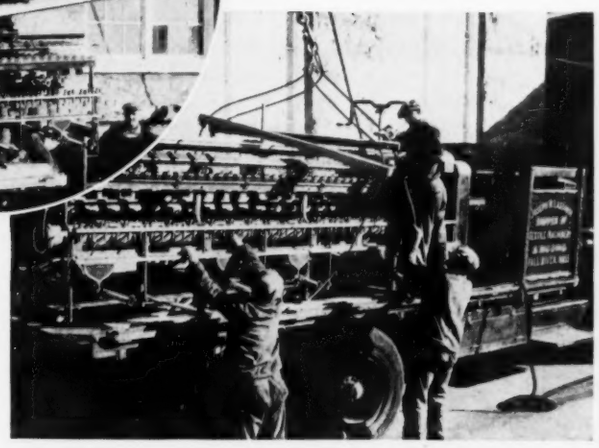
Although there are many variations because each case must be treated in light of its individual requirements, a general idea of practice in shipping various items of cotton mill machinery (similar items in wool and silk equipment being treated similarly) is indicated in the following rapid survey:

Bale breaker—skidded.



At left, swinging section of spinning frame aloft, skids under legs are shown

Courtesy Joseph M. Lassonde



At right, attaching spreaders to head end of spinning frame preparatory to raising with block and tackle

Courtesy Joseph M. Lassonde

Courtesy Southern Spindle & Flyer Co.

Two stages in the journey of a card—Above, removal from freight car to deck of motor truck; at right, raising to third floor of mill

Breaker picker—separated from the hopper feed and each part skidded separately.

Finisher picker—apron crated; balance skidded.

Bin distributors, condensors and fans—crated.

Cards—skidded.

Slubbers, intermediates and speeders—knocked down and crated or boxed, or split in sections and skidded.

Sliver lapper and ribbon lapper—legs taken off and crated; balance of machine crated.

Drawing frames—legs taken off and crated; heads skidded.

Combers—skidded.

Spinning and twisting frames—knocked down and crated; in instances of short hauls, separated into three sections and skidded. Spindles should not be taken from bolsters (due to difficulty in realignment) but should be fixed tightly in place.

Spooler—knocked down and crated.

Warper—creels crated; warper skidded.

Slasher—pulled down and crated; cylinders crated.

Looms—skidded and properly prepared by dismounting certain parts (as for example, the dobby loom head is taken off and crated separately).

Small parts—dismounted from machines and boxed.

Care in details of preparation is a great aid to the mover and to the railroad, and the above schedule touches only the high spots. For export shipment care should be redoubled and practically all machines crated or boxed. One shipper prefers boxing looms for export, using 1¼ in. lumber, packing with shavings and using heavy banding. Looms may be crated for export, but cards should be taken down and boxed. Such a shipment requires that each piece be marked and that a schedule for putting together accompany the shipment. Most moving jobs are let out on contract to those who are skilled through experience in the work.

The suitably prepared machines are moved on rollers or wheels, and may be raised with block and tackle attached by spreaders or hooks to substantial parts of the machine's frame or to a platform under it. The upper part of the block and tackle is attached to the mill's hoisting beam and the machine raised to the desired floor if being installed, or lowered if being removed. When machinery is arriving for installation, men are waiting in the open door or window and guide the machine to rollers over which it is dragged into the building. It is rolled into place, and set up and aligned by the moving squad or by the mill's mechanical department.

Obviously a completely worked out plan should precede every move. Materials and men must be at the required places according to schedule to avoid loss of time.

Double-Cloth Designs

INCLUDING TWO FACE TO ONE BACK, THREE TO ONE, AND MIXED ORDERS

By R. A. C. Scott

◆ *In designing double cloths, the face and backing weaves must be so placed in relation to each other as to insure the best stitching positions. Mr. Scott dwells at considerable length on this important matter of correct stitching throughout his series of articles on backed, double, and treble cloths.**

THE method of constructing double-cloth designs arranged two-face, one-back is illustrated in Figs. 55, 56, and 57. This is a very convenient method of arranging face and back, and allows the use of a thicker or heavier yarn of an inferior quality for the back while preserving the fine textural appearance of the face. For best results, it is customary to arrange these designs to start and end with one face, as shown at Figs. 55, 56, and 57, thereby allowing the face threads to occupy first and last positions in each split of the reed.

In Fig. 55 the Mayo or Campbell weave, as shown at *E*, is used for the face fabric, and the 2/2 twill, shown at *F*, for the back fabric. As before, the dots represent the lifters and the crosses indicate the warp stitching points arranged in twill order. By dropping face ends on the backing picks, as shown by the circles surrounding dots, the filling-stitch principle, also in twill order, is indicated, but the former is the better arrangement of the two.

The eight-end triangular granite weave illustrated at *G* is used for the face fabric in Fig. 56 with the 3/1 weave at *H* for the back. Although this is shown on design paper as warp flush, filling flush will appear in the cloth, due to the fact that the back cloth will be seen from the reverse side when the cloth is woven. Therefore, it should be borne in mind that when a warp flush is desired on the underside of the cloth, the filling-flush arrangement of the desired weave must be used on the design paper. Similarly in the case of twill direction, use left twill on design paper for right twill on the backing cloth, and vice versa.

In woolens where an intermediate weight is wanted, weaves of different degrees of firmness may be successfully combined in a two-face, one-back arrangement, such as 2/2 twill face and plain-weave back, or 4/4 twill face with 2/2 twill back, etc.

An example of this construction is illustrated at Fig. 57, where the 3/3 twill shown at *I* is used for face and the 2/1 twill at *J* is used for back. By this method the same counts of yarns can be used for face and back and yet retain a fine-looking face as well as a well-balanced cloth. Suitable weaving particulars for the latter design are as follows: 60 ends and picks per inch, 72 in. wide in loom, using 3-run woolen for face and back warp and filling, arranged 40 ends and picks per inch for face and 20 ends and picks for back, finished weight of around 19 oz.

An example of a design in which the face threads and picks are arranged three face to one back is illustrated at Fig. 58. The face weave is the 3/3 twill (*K*), drawn three right and three left; and the back weave (*L*) is the 2/2 twill running left. The system of construction is exactly the same as in the foregoing designs. The face and backing weaves are so placed in relation to each other that the best stitching positions are obtained—a consideration, be it noted, which is very important in the planning of all types of double cloths. In further illustration of this, let the reader use the weave as shown at L^a for back in place of weave *L*, as in Fig. 58, and note the series of imperfect stitches.

The three-face, one-back order of arrangement is used chiefly for cloths in which a very fine face is desired, generally with the use of fine worsted counts and a much thicker woolen thread on back. It is also considered very suitable for obtaining figured effects by interchanging, in which greater contrast is made possible due to the wider diversity in nature and character of the backing yarns.

In Fig. 59 a mixed order of arrangement is illustrated —in this case, one-face, one-back in warp and two-face, one-back in filling. The face weave, as indicated at *M*, is the four-up, one-down, one-up, two-down, one-up, one-down, move-two weave; and the back weave, as at *N*, is the 2/3 move-one (note positions of face and back weaves to insure perfect stitching). This principle of construction and arrangement is very suitable for cloths using fine warp yarns for both the face and back fabrics, closely set, with thicker yarns being employed for filling (especially on the underside), thus requiring fewer picks than ends.

Another example of the mixed order of arrangement is shown at Fig. 60; but in this instance the warp is arranged two-face, one-back, with the filling one-face, one-back. The face weave, as indicated at *O*, is a cut and broken version of the 2/2 twill; whereas the back weave, at *P*, is the well-known Russian twill—i.e., two right and two left of the 2/2 twill. The same procedure is followed in construction as explained and used in previous examples. This arrangement is considered very applicable to face weaves which repeat on twice as many ends as picks.

Irregular Arrangements

The purpose of employing irregular arrangements of double cloths is simply to facilitate the combining of two single weaves which do not complete on the same number of ends and picks. This in no way makes the structure of the cloth irregular, but is only an arrangement of the plan designed chiefly to obviate large plan making. Further, by adopting this principle, a finer face fabric than

*Previous articles appeared June, August, and September, 1932; and February, May, and October, 1933.

back fabric may be made in almost any required proportion.

The main point to note, however, is that suitable weaves are selected for the face and back fabrics respectively. For instance, if the threads are arranged five face to four back, a five-harness face weave should be combined with a four-harness back weave; if six face to four back, a six-harness weave should be combined with a four-harness weave; if nine face to seven back, a nine-harness weave should be combined with a seven-harness weave, and so on. An example of a seven-harness weave for face and a five-harness weave for back arranged one-face, one-back, two-face, one-back, one-face, one-back, two-face, one-back, one-face, and one-back is illustrated at Fig. 61. The 5/3 move-two whipcord weave (*R*) is used for face and the 3/2 move-two venetian weave (*S*) for back. The warp stitching positions indicated by crosses are distributed in broken or irregular order. It will be noticed that no tie is placed on the second and fifth face picks, which is, of course, unavoidable due to the unequal proportions of ends and picks of the two weaves employed.

Combining the 3/3 twill for face and the 2/2 twill for back in the order of one-face, one-back, two-face, one-back, one-face, one-back, two-face, and one-back, gives a similar appearance on both sides of the cloth. The cloth, in fact, will resemble very closely the double 2/2-twill construction, but will have superior wearing properties on account of the finer face construction. This design is illustrated at Fig. 62.

When constructing double-cloth designs for looms with changing boxes at one side only, it is necessary, where the backing filling is different from the face filling, to arrange the designs so that the picks alternate with each other in even numbers, such as 2 and 2, 4 and 2, etc. The arrangement of the face and backing ends may be the same as in ordinary double cloths; and in fact, from the stitching standpoint, it is better that this arrangement be followed. Warp stitching is usually employed, as difficulty is often experienced in finding suitable stitching positions in the filling system of tying—and moreover, they are not so easily covered when the picks are arranged in even numbers.

At Fig. 63 an example is given of a design arranged one-face, one-back in warp and two-face, two-back in filling, using the 2/2 twill for face weave and the 3/1 warp crow for back weave. The sateen order of warp stitching is employed in Fig. 63. In Fig. 64, however, the filling stitching is shown in twill order—the latter, of course, being the firmer method of stitching. A twill order of tying can be applied equally well to the design at Fig. 63, by adopting the stitching arrangement shown at Fig. 50 (TEXTILE WORLD, October, 1933, page 71).

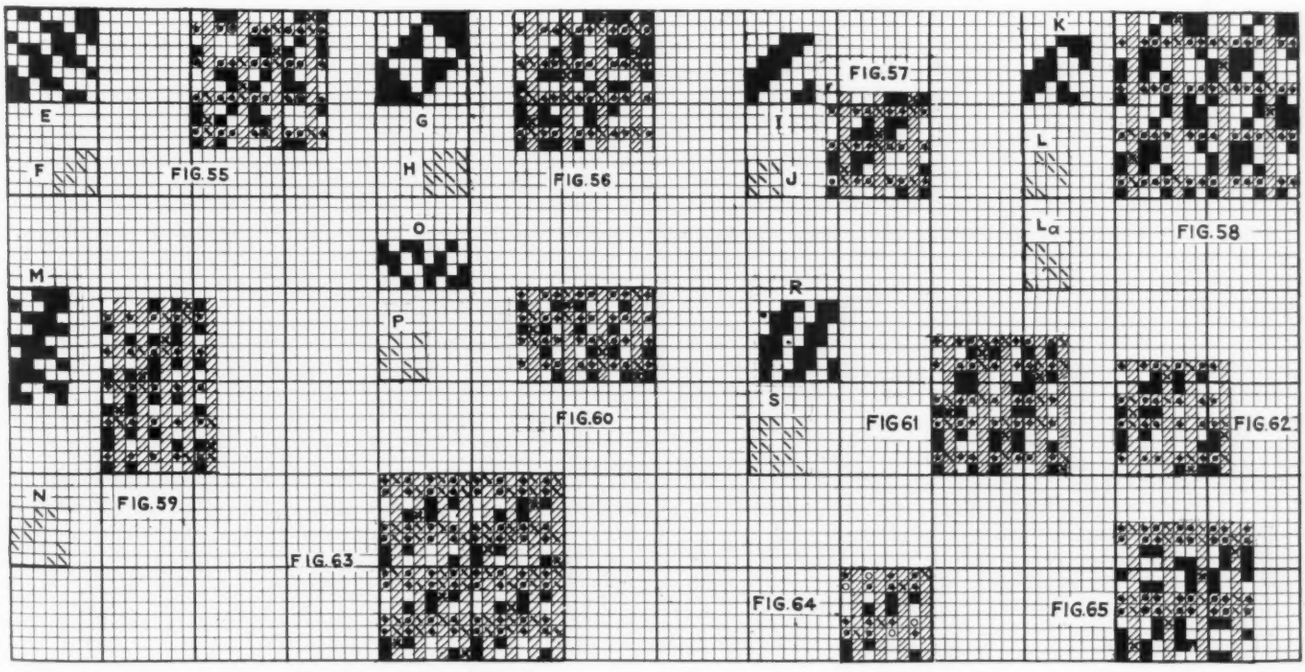
The two-face, one-back arrangement in warp with the four-face, two-back order of filling is indicated at Fig. 65. The face weave in this instance is the Mayo, illustrated at *E*, while the back weave is the warp crow running left (showing right in cloth), with warp stitching in twill order.

It will thus be seen that the principle of these cloths, as far as construction is concerned, follows the same system of formation; and it is therefore quite unnecessary to enlarge further on this phase of the subject. The settings may be worked out on the particulars previously given.

Beaming and Drafting

The same conditions apply to double cloths as govern backed cloths. Briefly stated, therefore, where the face and back weaves are of unequal firmness, or where the face and back yarns are of unequal proportions and characteristics, or a combination of both, it is necessary and highly advisable to use two beams instead of one. In other words, where each series of threads requires different degrees of tensioning to insure cloth uniformity, the system of employing two or more beams is the only method to adopt by way of regulating and distributing the correct tension to each series of warp threads. Of course, where the weaves are of similar tightness and the same yarns are used for both back and face, then the use of one beam is quite practical.

Drafting follows the same rules as advocated for warp- and filling-backed cloths—either straight or skip-shaft, depending on the harness capacity of the looms and the nature and strength of the backing yarns, etc.



Ramie Fallacies

HAVE BROKEN MANY HEARTS

By George A. Lowry

◆ *"The fascinating beauty of ramie has deceived many and caused heavy losses," states Mr. Lowry. Only the other day we learned of another ramie venture which cost its sponsors several hundred thousand dollars and netted nothing. The Technocrats, rest their souls, spoke of ramie as certain to supplant all other textile fibers. Although the victims of the illusion are usually men unfamiliar with textile manufacture, there have been instances in which experienced textile men have fallen temporarily under the spell. In this article Mr. Lowry, who has devoted years to a study of the numerous vegetable fibers, tells what is the matter with ramie.*

WITHIN the last year or two there has been a repetition of the grossly misleading statements which crop up from time to time regarding ramie and its value in relation to the fibers produced and manufactured in this country.

Ramie, sometimes called rhea and known to commerce as China grass, is not a stinging nettle, statements to the contrary notwithstanding, and has never affected the money market in any way. It yields only 1% of spinnable fiber; and to get the 1,500 lb. of fiber to the acre, which has been alleged possible, would require production of 75 tons of green plants in that area—which is out of the question.

There is no machinery for harvesting ramie; and there is not only no automatic machinery for spinning it, but those domestic mills which have tried to spin it have lost heavily and have given it up. While it has a little more tensile strength than cotton, wool or flax, it has very low abrasion qualities; and abrasion qualities (that is, wearing qualities) are most desirable in fabrics.

Ramie was known before the pyramids were built; and while we have now in existence many thousand yards of linen made at that period, I have never heard of any moderately old ramie cloth. Neither has the wonderful strength claimed for it been utilized for cordage, for the good reason that if you tie a knot in it it cuts itself under very slight strains.

As to its value for paper pulp, our cotton stalks are of the same nature as ramie; but, not being stripped of their fibrous bark as ramie is, they would make much better paper—and yet none of it is used for that purpose. Instead the stalks are broken up and worked into the soil again to help repay what has been taken out.

This same hullabaloo is raised every once in a while, by impractical people, about corn stalks and the short flax straw that is wasted in the Northwest, and also about a thousand other straws and reeds now going to waste. Many expensive plants have been erected and later abandoned because unprofitable, due to the fact that the baling and hauling of these light but bulky materials cost too much, as does also the mechanism to utilize them.

Ramie or China grass comes mostly from China; and while it belongs to the nettle family, as do many other plants, it does not sting. In China it is grown in small garden patches in only such quantities as permit the grower and his family to do all the work necessary to cultivate, gather and prepare it. The ribbons of bark are stripped from the stalks and, after washing and scraping, are separated from the fiber. The fiber, when dried and sun-bleached, is tied in handfuls and taken to market. Nature does most of the work and the family—subsisting on a few handfuls of rice—does the rest.

Even if there were mechanism to do all this (and there is no such mechanism), how could we compete with it?

You cannot count on production here equaling that in China. For example, we average only about 15 bushels of wheat per acre, while in the Province of Shantung they get an average of 40 bushels of wheat per acre.

If the same meticulous care were given to our cotton as is given by the Chinese to almost every stalk of ramie, we would get over 500 lb. instead of 153 lb. of fiber per acre, and 1,000 lb. instead of 306 lb. of cotton seed—the latter being a by-product that yields food for man and beast, and linters for rayon mills.

Recently 6,000 lb. of flax straw per acre was grown in Georgia from a special seed which yielded 1,225 lb. of crude fiber and 12 bushels of planting seed—the latter worth $3 per bushel. Development in the production and handling of flax fiber for making linen is progressing.

Until we cultivate as carefully and thoroughly as do the Chinese and Japanese, and until we perfect mechanism to decorticate, degum and spin ramie and give it the enduring qualities of linen, wool and hemp, there is no danger whatever that it will, as has been said, ruin cotton, wool and flax growing; ruin pulp wood production; ruin cotton, wool, silk, rayon and paper manufacturing; or cost a million of jobs, break thousands of banks, capsize the value of lands—or in fact do any of the damage predicted.

If the author of a certain article published in *Scribners* last year had known anything about fiber-producing plants, he might, in his travels through Central and South America, have found the best one of them all—viz., the Bromelia Karatis or Bromelia de Colombia, as it is botanically known. It has nearly all the qualities he claims for ramie; and, besides that, it has remarkable durability. The robes of the ancient Incas were made from it, and they are still in good condition. Millions of acres are growing wild and, up to this time, can be had for the cutting; but so far no one has been able to produce the fiber profitably. It has the same small yield as ramie, and hauling in those countries is uneconomical.

The fascinating beauty of ramie has deceived many and caused heavy losses. Among fibers it belongs in the "follies" class, for it has broken many hearts.

Now jute, which is produced next door to it in the same way, is a very homely fiber and has only a fraction of the tensile strength of ramie, but it has fairly good wearing qualities and can stand a lot of abuse. You will find it in manufactured material all over the world, giving jobs and incomes and comfort to millions.

Do not let any one fool you into believing that we can compete with the Chinese farmer or the ryots of India in producing any kind of fiber.

Knitwear Exposition

PRESENTS NEWEST DEVELOPMENTS IN MACHINERY, YARNS, ACCESSORIES

THE National Knitwear Industrial Exposition celebrates its first anniversary with more than a 50% increase in number of exhibits. The second annual show opens at the Grand Central Palace Monday Feb. 12 and continues through Friday Feb. 16.

In view of the fact that last year's exposition, the first of its kind, was an outstanding success although held at practically the low point of the depression, great things are expected this year as a result of the sharply improved situation.

More than 40 machines, many of them to be shown for the first time, are on exhibit. These include the latest improvements in knitting, sewing, finishing, and packaging machines. Needles, yarns, supplies and accessories used in knitwear manufacture complete the showing of the 50 firms represented. Not only will the show reveal mechanical development but it will reflect marked progress in the creation of new yarns for knitwear.

In conjunction with the exposition, the National Knitted Outerwear Association has scheduled its annual convention and banquet. The convention takes place on the mornings of Feb. 13 and 14 in a specially constructed room on the floor of the Grand Central Palace where the exposition is held.

The convention is planned to take the form of a hearing by the knitted outerwear code authority. It affords groups, divided on the basis of production and distribution, an opportunity to suggest rules for the regulation of their own problems.

The banquet is scheduled for Wednesday evening, Feb. 14.

The effect of the codes through limiting hours is expected to be reflected in the interest manifested in additional equipment to round out mill production facilities.

The exposition last year drew an attendance of over 10,000, according to A. B. Coffman, manager. Well in advance of the opening of this year's show, he said, mill executives from 15 States and six foreign countries had expressed their intention to attend. (For guide to exhibits, see page 94.)

Knit-Outerwear Design

POINTS ON PATTERN WORK FOR LATCH-NEEDLE SINKER-TOP MACHINES

By Leslie Miner

THERE are many things that a knitter should take into consideration before he starts to make his pattern on Brinton latch-needle, sinker-top, cylinder machines. After selecting the particular machine which is to produce the fabric, he must note the number of needles in the cylinder and also the number of feeds. Then he must select pattern wheels which will divide into the cylinder of needles. Upon the pattern wheel, of course, depends the size of the pattern field.

For the pattern which is the subject of this article we shall take a 24-in. cylinder. The cut of the machine is 13 needles per inch, and the gage of the needles is 24. There are sixteen feeds—eight plain and eight pattern. The cylinder holds 984 needles.

We shall have to find a pattern-wheel that will divide into this cylinder of 984 needles and either leave exactly one part of the wheel over or fall exactly one part short. So we shall try a wheel that covers 120 needles once around. Such a wheel, if divided into five parts, would give us a pattern field 24 needles across. (See Fig. 1.) The eight pattern wheels will make the pattern field 5x8, or 40, courses high. Our 120 wheel divides into our cylinder of needles eight times, lacking 24—exactly one part, as desired.

[Perhaps our less-experienced readers will consider that the author was lucky in arriving so readily at desirable numbers of needles and parts for his pattern wheels. They may prefer to employ the method outlined for cut pressers by J. Frederick Cahill on pages 46 and 47 of the February, 1933, issue of TEXTILE WORLD. Mr. Cahill's system is to factor the cylinder needles, to select from the factors thus obtained a divisor as a part, and finally to try various numbers of parts to obtain a complete cut presser (pattern wheel) which, when divided into the cylinder, will either give a remainder of one part or fall short one part. Unfortunately, both systems involve a certain amount of trial and error.—*Editor.*]

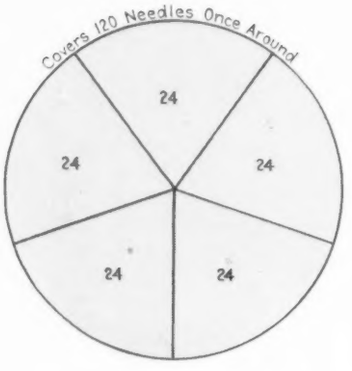


Fig. 1. The pattern wheel

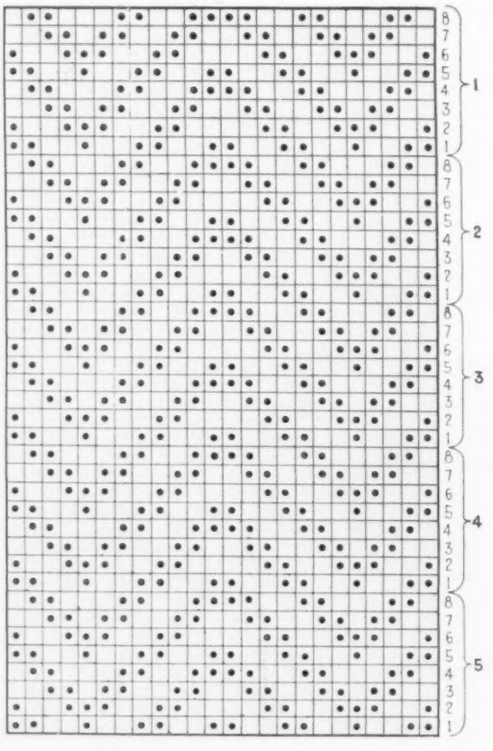


Fig. 2. A herringbone pattern

The pattern field arrived at in the foregoing will now be used to draft out a herringbone pattern, as illustrated in Fig. 2. The repeating numbers running from 1 to 8 within the brackets represent the eight pattern wheels. The numbers running from 1 to 5 outside the brackets represent the parts (or the number of times a part of 24 needles divides into the total pattern wheel of 120).

To read this plan for setting up the wheels, we start at the top of the drawing and take No. 1 in each bracket going down, as shown in the accompanying table. Then we take No. 2, etc.

When drawing up a pattern, it is not a good policy to try to float more than six needles. Sometimes when we make a drawing and see that we are going to float too many needles, we reverse the reading of the pattern, calling the dots the ins and the blank squares the outs.

When No. 1 wheel is blocked, the start should be made on *2 out* and the wheel marked at that point. When No. 2 wheel is blocked, the start should be made on *1 out* and the wheel marked there. Starts and markings for the other wheels are as follows: No. 3, *2 in;* No. 4, *1 in;* No. 5, *2 out;* No. 6, *1 out;* No. 7, *2 in;* and No. 8, *1 in.*

When the wheels are put on the machine, they should be taken in numerical order as they have been set up, and care must be exercised to see that they are not mixed. Start at No. 1 feed on the machine, mark a

Arrangement of Pattern Wheels for Herringbone in Fig. 2

No. 1 Wheel: **No. 1 in bracket No. 1—2 out, 2 in, 1 out, 2 in, 2 out, 2 in, 2 out, 2 in, 2 out, 2 in, 1 out, 2 in, 2 out—24**
No. 1 in bracket No. 2—2 out, 2 in, 1 out, 2 in, 2 out, 2 in, 2 out, 2 in, 2 out, 2 in, 1 out, 2 in, 2 out—24
No. 1 in bracket No. 3—2 out, 2 in, 1 out, 2 in, 2 out, 2 in, 2 out, 2 in, 2 out, 2 in, 1 out, 2 in, 2 out—24
No. 1 in bracket No. 4—2 out, 2 in, 1 out, 2 in, 2 out, 2 in, 2 out, 2 in, 2 out, 2 in, 1 out, 2 in, 2 out—24
No 1 in bracket No. 5—2 out, 2 in, 1 out, 2 in, 2 out, 2 in, 2 out, 2 in, 2 out, 2 in, 1 out, 2 in, 2 out—24

This gives us one wheel of 120 needles with five parts, 24 needles in each part. Dots in Fig. 2 indicate the outs or needles which float, and blank squares indicate the ins or needles which knit.

No. 2 Wheel: **No. 2 in bracket No. 1—1 out, 2 in, 3 out, 2 in, 2 out, 4 in, 2 out, 2 in, 3 out, 2 in, 1 out—24**
(No. 2 in brackets 2, 3, 4, and 5 reads the same)

No. 3 Wheel: **No. 3 in bracket No. 1—2 in, 2 out, 1 in, 2 out, 2 in, 2 out, 2 in, 2 out, 2 in, 2 out, 1 in, 2 out, 2 in.—24**
(No. 3 in brackets 2, 3, 4, and 5 reads the same.)

No. 4 Wheel: **No. 4 in bracket No. 1—1 in, 2 out, 3 in, 2 out, 2 in, 4 out, 2 in, 2 out, 3 in, 2 out, 1 in—24**
(No. 4 in brackets 2, 3, 4, and 5 reads the same.)

No. 5 Wheel: **No. 5 in bracket No. 1—2 out, 2 in, 1 out, 2 in, 2 out, 2 in, 2 out, 2 in, 2 out, 2 in, 1 out, 2 in, 2 out—24**
(No. 5 in brackets 2, 3, 4, and 5 reads the same.)

No. 6 Wheel: **No. 6 in bracket No. 1—1 out, 2 in, 3 out, 2 in, 2 out, 4 in, 2 out, 2 in, 3 out, 2 in, 1 out—24**
(No. 6 in brackets 2, 3, 4, and 5 reads the same.)

No. 7 Wheel: **No. 7 in bracket No. 1—2 in, 2 out, 1 in, 2 out, 2 in, 2 out, 2 in, 2 out, 2 in, 2 out, 1 in, 2 out, 2 in—24**
(No. 7 in brackets 2, 3, 4, and 5 reads the same.)

No. 8 Wheel: **No. 8 in bracket No. 1—1 in, 2 out, 3 in, 2 out, 2 in, 4 out, 2 in, 2 out, 3 in, 2 out, 1 in—24**
(No. 8 in brackets 2, 3, 4, and 5 reads the same.)

needle on the cylinder, and set the wheel so that the mark on the wheel and the marked needle in the cylinder coincide. When setting a wheel on a Brinton machine, be very careful that it is close to the wall of the cylinder, but not close enough for it to strike the comb of the cylinder. The question can be easily settled by raising the butts of the needles away from the wheel and giving it a turn. While the wheel is turning, place a finger on the top of the screw-head which holds the wheel in place; and if it is striking, you will feel it. The next feed is plain, the next is No. 2 pattern wheel, and so on alternately until the eight pattern wheels are in place with sixteen feeds in all.

If pattern wheels from the drawing for this particular pattern are set up correctly, the beginning and end of each section of the wheel will be alike. For example, the first section of the first wheel (No. 1 in bracket 1) begins with *2 out* and ends with *2 out*. Likewise the second section of the first wheel (No. 1 in bracket 2) begins and ends with *2 out*.

This pattern can be made in wool and silk by tying wool on the eight plain feeds and silk on the eight pattern feeds. It can also be made of all silk, silk and cotton, or cotton and wool. When using silk with wool or with cotton, it is best to run a little tighter stitch on the silk feeds; but when running the same type of yarn on all feeds, such as all wool, silk, or cotton, the stitch should be uniform.

Following are the plans of another fabric (illustrated in Fig. 3) completely worked out for the same type of machine:

Size of cylinder	18 in.
Cut of machine	13
Stitch or courses to the inch, stitch glass	21
Gage of needle	36
Size of hooks of cylinder needles	36
Feeds on machine	4
Needles in cylinder	666
How the needles are arranged into the cylinder	All in

The feeds:

No. 1 feed, pattern wheel, covering 108 needles once around.
Yarn on this feed, 300-denier white rayon.
No. 2 feed, pattern wheel, covering 108 needles once around.
Yarn on this feed, 2/30 red worsted.
No. 3 feed, pattern wheel, covering 108 needles once around.
Yarn on this feed, 300-denier white rayon.
No. 4 feed, plain.
Yarn on this feed 2/30 red worsted.
All wheels are set up *3 in* and *1 out*.

To set the wheels: Mark a needle in the cylinder, start at No. 1 feed, set the wheel on *1 out*. The other pattern wheels are set the same as this one. The feeds that the rayon is tied on should be run with a little tighter stitch than the worsted feeds. The knitter should so arrange this that the fabric stitches will appear even and have a neat appearance.

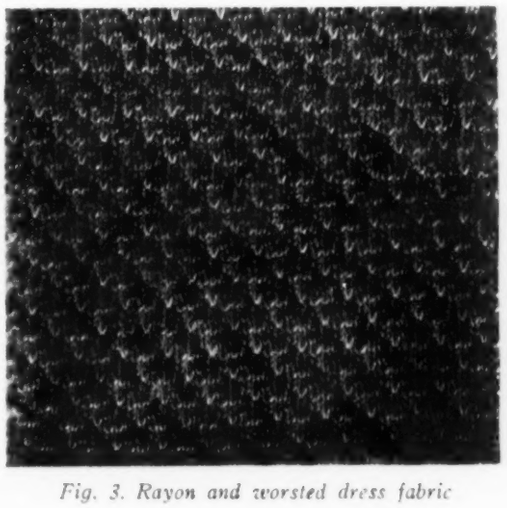


Fig. 3. Rayon and worsted dress fabric

Textile World's Guide to Outerwear Show

American Silk and Rayon Journal, New York. Booth 34. Textile Publishers.

American Woolen Co., Inc., New York. Booth 67. Wide range of yarns for knitted outerwear.

Arrow Needle Co., Manchester, N. H. Booth 45. Full line of latch needles for all makes of knitting machines both flat and circular.

H. Brinton Co., Philadelphia. Booths 80-81. Makers of ribbers, jersey machines, sweater machines rib-body machines for underwear and bathing suits, and special knitting machinery.

Clifton Yarn Mills, Clifton Heights, Pa. Booth 81. Novelty yarns for sweaters, infants' wear, and bathing suits; emphasizing special yarns for women's dresses and two-piece suits; line includes chalky frills, two-tone flossettes, linette and angorette.

Davison Publishing Co., New York. Booth 37. Textile publishers.

Dubied Machinery Co., New York. Booths 52-53. Links-and-links, pearl-stitch machines. Featuring Type CAP, a fully automatic machine giving various stitch combinations; and Type CUF, a jacquard machine of modern construction and simple to operate.

Franklin Needle Co., Franklin, N. H. Booth 49. Needles, jacks, and sinkers.

Grand Rapids Textile Machine Co., Grand Rapids, Mich. Booth 6. Dyeing and finishing machinery for knit goods; reverse-plating pattern attachment for latch-needle knitting machine; individual motor drive for knitting machines. Featuring new machine for pressing cotton or wool underwear and sweaters and bathing suits; and a new type of machine for steaming, spreading, and calendering all tubular fabrics.

Grisman Co., Inc., New York. Booths 47-48. Knitting yarns.

Grosser Knitting Machine Co., New York. Booth 1. Knitting machinery.

Harlem Knitting Machine Co., New York. Booth 44. Steaming and tentering machine for knit goods.

Jacquard Knitting Machine Co., Inc., Philadelphia. Manufacturer of circular jacquard knitting machines.

Loyal T. Ives Co., New Brunswick, N. J. Booth 40. Spring-beard needles, sinkers, jacks, and special parts for knitting machines.

Knit Craftsmen, New York. Textile association.

Knit Goods Weekly, New York. Booth 64. Textile publishers.

Knitted Outerwear Age, New York. Booth 88. Textile publishers.

Maine Spinning Co., Skowhegan, Me. Booth 47. Worsted knitting yarns, coats, and bathing suits.

Markem Machine Co., Keene, N. H. Booth 51. Machines for printing size, style, and lot numbers on labels, tickets, stickers, boxes, fabrics, etc.; marking devices and inks; engraved dies and type. Emphasizing label and box marking machines and ticket and sticker printing machines.

Masurel Worsted Mills, Inc., Woonsocket, R. I. Booth 94. Novelty yarns for knitting. Featuring chenilles, ratines, boucles, angora, cashmere, multicolor, and nib yarns.

Mayfair Yarncraft Inc., New York. Booth 62. Worsted and mohair yarns.

Merion Worsted Mills, West Conshohocken, Pa. Booth 81. Worsted, merino, and novelty yarns.

Merrow Machine Co., Hartford, Conn. Booth 43. High-speed trimming and overseaming, overedging, plain chrochet, and shell-stitch machines. Featuring equipment for seaming, blind-stitch hemming, and plain and ornamental edge-finishing operations on knitted outerwear.

Mohtex Spinning Co., Inc., New York. Booth 2. Woolen, worsted, and novelty yarns.

National Knitted Outerwear Association, New York. Booth 86.

Payson Brothers, Inc., New York. Booth 98. Rayon, worsted and novelty yarns.

Priscilla Worsted Mills, Thornton, R. I. Booth 48. Knitting yarns.

Queens Machine Corp., Brooklyn, N. Y. Booth 79. 54-inch, six-gage, fully automatic, links-and-links machine with improved spring jack; improved sinker.

Rayon and Melliand Textile Monthly, New York. Booth 59. Textile publishers.

Reece Button Hole Machine Co., Boston. Booth 66. Full line of button hole machinery; featuring a new machine for sewing imitation sleeve button holes and another new machine for trimming both thread and cord on a square-ended, sack-coat button.

Robaczynski Machine Corp., Brooklyn, N. Y. Booths 76-77. Links-and-links knitting machine with improved carriage, and new take-up.

Jonathan Ring & Son, Inc., Philadelphia. Booth 81. Woolen and merino yarns.

Rose Mills, Inc., Clifton Heights, Pa. Booth 83.

Schumer & Friedman, New York. Booth 50. Rayon knitting yarns.

Singer Sewing Machine Co., New York. Booth 78. Eyelet-end, taper-bar-button hole machine for sportswear and sweaters; high-speed overedging machine with automatic lubricating system; machine for stitching and trimming knitwear; ornamental or crochet stitch machine; and top-corded, straight button hole machine for use on light-weight knitwear.

Supreme Knitting Machine Co., Brooklyn, N. Y. Booth 69. High-production circular knitting machine.

Sussman Yarn Co., Brooklyn, N. Y. Booth 81.

Textile High School, New York. Booth 87. Exhibit of work of students in knitting department.

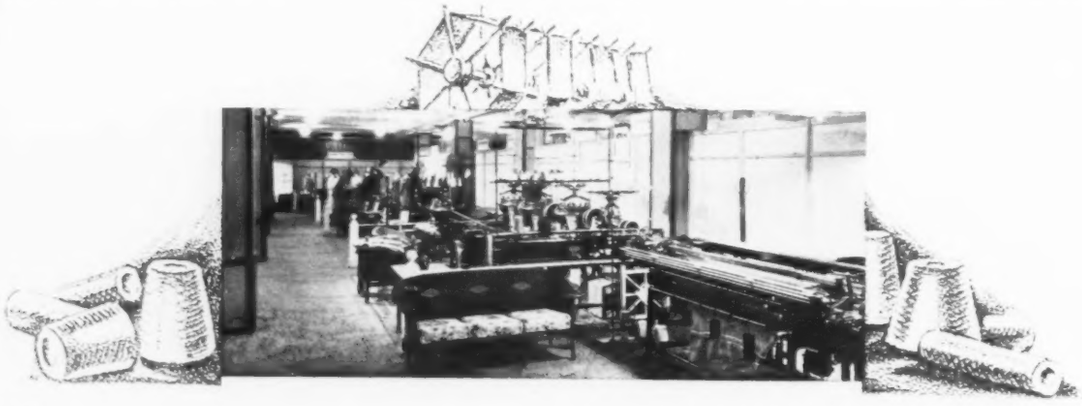
Textile World, New York. Booth 70. Textile publishers.

Torrington Co., Torrington, Conn. Booth 4. Latch and spring-beard knitting machine needles.

Union Special Machine Co., Chicago. Booth 84. Complete line of sewing machines. Featuring three machines for hemming necks, armholes, skirts, and trunks of swimsuits; for attaching trunks to skirts of these garments; and for seam covering. Emphasizing also a new machine for overseaming and inserting reinforcing tape and a combination machine for blind-stitch hemming and straight seaming.

D. F. Waters & Son, Inc., Germantown, Pa. Booth 95. Dyers of yarn, hosiery, and knit goods.

Thos. Wolstenholme Sons & Co., Inc., Philadelphia. Booth 5. Zephyr yarn and merchandise made therefrom.



ADVERTISING PAGES REMOVED

Washington Letter

NEED FOR TEXTILE CURTAILMENT CAUSES SOME APPREHENSION

By Paul Wooton

Washington Correspondent, TEXTILE WORLD

OPERATION of the codes for the textile industry is being watched with particular interest. This is due partly to the importance of the industry, partly to the fact that the cotton textile code was the first code put into operation and partly to the fact that no industry has shown a better disposition to cooperate in securing a fair trial of the plan. For this reason the growing demand for the reduction of operating time is regarded as being of particular significance. Some apprehension is felt as this reflects on the effectiveness of the plan itself to increase buying power. Industries under codes and complying with the President's re-employment agreement have added greatly to payrolls, but the promised increased buying of merchandise has not come up to expectations. As a consequence, 250,000 or 300,000 textile workers were forced to lose a week's time in December and another week in January.

The prevailing opinion is that consumption will not continue to lag. There is evidence, as this is written, that the public is becoming generally aware of the prospect for much higher prices, as existing low-cost stocks are sold out. There are plenty of evidences at this time of price increases. For example, a staple silk fabric which was formerly sold at $1.15 a yd. and merchandised largely through department stores, now is bringing $2.30 per yd., an advance of 100 per cent. That many merchants have not taken advantage of the situation to mark up their stocks is proved by the fact that there are numerous items that were being sold in January at retail at prices lower than that being quoted for the same materials by wholesalers.

It also is recognized that the cotton curtailment program for the 1934 crop is certain to be more effective in the light of the experience in 1933. More than that, it hardly is to be expected that Nature will be as kind to growing cotton this year as was the case last year. That very fact, however, raises the question as to the extent of the offsetting effect of the buying power that will be lost with less cotton to cultivate, less cotton to transport, and less cotton to handle at gins, docks, and warehouses.

President Roosevelt's announcement that the tariff problem is to be approached with the idea of keeping our balance of trade with individual nations on as nearly an equal basis as possible, was regarded by many as an encouraging prospect for the textile industry. Its export market has been restricted more and more by Empire preference among the British commonwealths by the rise of the low cost textile industry in Japan, and by the various barriers that have been raised by most nations in efforts to protect themselves in the emergency created by the depression. Under such conditions it is believed that the textile industry would fare well in agreements looking to the equalization of the balance of trade. Sight should not be lost of the fact that the President emphasized that any equalization must take into consideration American tourist expenditures, remittances by immigrants, payments for shipping and other services that contribute to the invisible trade balances.

With the discussion of the tariff has come the conviction that agreements affecting the export of American textiles must be largely with Latin American countries. The inroads that have been made this year by the Japanese in the Philippine and Indian markets make the outlook gloomy for increased trade with the Far East. With the stabilization of the currency the present movement of goods to European markets will be curtailed unless definite agreements can be negotiated. However, in equalizing the balance of trade with Cuba and with other countries in Latin America, material increases in their purchases of American manufactured products necessarily would result. The popularity of American textiles in that section of the world would leave little doubt that this branch of American industry would be benefited by any agreement which would provide for increased purchases of manufactured products to offset balances of trade built up by our purchases of raw materials such as sugar, coffee, bananas, nitrate, and a long list of minerals.

While the NRA is coming in for sharp criticism on Capitol Hill, and in other quarters, the prevailing opinion among those in touch with industry is a favorable one. With regard to its effect on the textile manufacturers, O. Max Gardner, who has been intimately associated with the application of the act to that industry, authorizes this statement:

"The most discussed, the most lauded, the most criticized child of the new deal is the NRA. A psychologist would call it a problem child. It is this aspect of the new deal in which the country at large has built its strongest faith. The National Industrial Recovery Act is the Magna Charta of industrial society. The codes of fair competition that have been promulgated since last spring have had a power and an influence in improving the economic conditions of industry, of labor, and in safeguarding the consumer to an extent heretofore believed impossible.

"The cotton manufacturing industry is the greatest industry in the entire South. It is one of the most important industries in the nation. It is highly competitive. It has been absolutely primitive in its individualism. The rugged individualism of the industry stood out so prominently that the President himself mentioned it last summer in his NRA speech, yet the cotton textile industry was the first to come in under the code. It was the first to lay the foundation for the reduction of hours, spread of employment, increased minimum wages, and the abolition of child labor. Thus we find that the stone rejected in the economic structure has today become the head of the corner.

"Under the NRA, overproduction in cotton textiles, long a point of bitter contention, is gradually ceasing. Last March the cotton textile industry was working 320,000 operatives. In September these employees numbered 466,000. This was a gain of 146,000, or 45%. Payrolls increased from $12,800,000 in March to $27,000,000 in September—a gain of $14,200,000, or 110%.

"The benefits which already have accrued to labor and to industry never will be abandoned. The statute may be changed but the great permanent values already derived have become a part of the warp and the woof of the common law of this nation."

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Machinery Code Director

William S. Pepperell has been unanimously elected executive director of the code authority of the textile machinery manufacturing industry. For the time being, his office will be at the present address of the code authority, 38 Chauncy St., Boston.

Mr. Pepperell has had wide and varied experience in both the textile and textile machinery businesses. He is president of the Hebronville Warehouse & Processing Co., president of the Southern New England Textile Club, and treasurer of the National Association of Cotton Manufacturers.

Overseers'

THIS DEPARTMENT—

offers a new subject for discussion each month and gives readers' comments on problems introduced in previous issues. The subject opened in December is closed and summary is contributed ideas is given on opposite page. Overseers and others are invited to discuss the subject presented under the heading "Curtailment and the Overseer's Pay" and other questions brought up in the super's talks. Letters accepted and published will be paid for without regard to length. Brevity is desirable.

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CURTAILMENT AND THE

"I HAVE a problem on hand that I know you will all want to discuss even though we have touched on it before," said Superintendent Chase as the meeting opened. "When I was talking with the big boss the other day about curtailment under the code, he asked me whether I thought we should continue to give the overseers full pay when we are actually only running three days a week. I told him that I would think over all the pros and cons and let him have my opinion. What have you fellows to say on the subject?"

"I presume that there will be an unanimous vote in favor of three days pay for three days work," he added with a grin.

"I have not made a habit of cutting my own throat," Bill grinned back, "but I'm afraid that I am pretty much in the habit of giving my honest opinion, and I must confess that I believe an overseer's pay should be reduced when working time is reduced. The mills are up against a tough proposition as it is with overhead expense that can't be pared down and it's ridiculous to expect them to go on paying an overseer for the two days a week that he sits at home in his slippers and smokes the old pipe. It isn't as though this curtailment were just something temporary. My guess is that we'll find ourselves running on a short schedule a fair part of the time. After a'l, the workers only get paid for the time that they are on the job, and I don't see that overseers are so high and mighty that they should draw pay for sitting around the house or going fishing."

"This business of placing overseers on the same basis as the

About Mistakes and Arguments

Editor, Overseers' Round-Table:

Assuming that the overseer didn't lose control of his temper, a worker who has made a bad mistake and then talked back should be punished in some way or discharged. An overseer should never lose his temper. He should know his men and guide himself accordingly in such cases. A short lay-off would serve in some cases, while demotion or discharge would answer in others. Allowing a worker to talk back without punishment would soon result in lack of discipline. Without a certain amount of discipline, no department can be efficient.

P. M. Crofts.

Editor, Overseers' Round-Table:

"Discipline must be maintained" is No. 1 in the overseer's rules, and justly so, but the methods of maintaining discipline, by some overseers, are questionable.

Visible loss of temper and "bawling out" soon cause loss of respect, among the workers, for the overseer and there can be no real discipline without respect.

In most cases, when a worker "talks back," it is because the overseer, by loss of temper and self-control, has laid himself open to that very thing. Discharge is a very drastic punishment and is often regretted by the overseer after he has cooled off, and is a very serious happening for the worker.

It has been the practice of the writer, when it has seemed necessary to discipline a worker and make an example of him as a warning to the other workers, to lay him off for a couple of days or even a week. This gives him time to think things over, and hurts him in the pocket also. After the period of meditation, he will come back in a chastened mood, feeling that he has had a square deal, and quite ready to get down to a fair day's work. A. Dyer.

Editor, Overseers' Round-Table:

I do not believe a man should be discharged if he makes a mistake and then talks back. I have learned by experience (in some cases) that this is a very costly mistake as far as the company is concerned.

For example: Some years back I had a man in my department who produced a quantity of bad work. I tried to reason with him and show him his mistake, but he would not listen and I let him go. At the time business was rushing, and a good, experienced operator was hard to find.

I hired a new man. He seemed to be getting along just fine after a few weeks, so I thought I had made a good change. Well, the first thing I knew my new man had made a more costly mistake than the man I let go. So in my mind the change did not *pay*. Here's the reason why: in about nine months the man I let go came back and acknowledged his mistake and promised to do the right thing if I would give him another chance. I did, and he is with the company today.

The best method I have found for a case of this kind is to let the man off for a week or so, give him a chance to cool off, then have a heart-to-heart talk with him. If he is made out of the right kind of stuff he will listen to reason. Try it sometime, you might get a surprise. Tom.

Editor, Overseers' Round-Table:

In reference to the question as to how an employee should be handled if he talks back after making a bad mistake:

I would suggest that such an employee be discharged then and there. Perhaps if he is of great value he might be taken back again when he gets over his cockiness and has found out who is boss.

F. J. McNeice,
Dyer, Broadalbin Knitting Co.

Editor, Overseers' Round-Table:

One great trouble with too many overseers is that they want to be considered as the BOSS, rather than as the man in charge and as advisor and helper. Too many overseers have not learned the essential requirement that "to command respect you must first respect."

There is always a way to correct

Round-Table

OVERSEER'S PAY

workers is all wrong," Pete came back. "I know that there are some mills that have always paid overseers on an hourly or daily basis, instead of having a weekly salary, but I don't think that the plan is sound. You get much more out of your overseers when you treat them as though they were a real part of the organization rather than just paid hands. How is an overseer going to feel when his pay is clipped 25% when he knows darn well that the president and treasurer and the other big shots go right on drawing down the cash whether the mill runs or not? Even if, as Bill predicts, we are going to be on a curtailed basis for a fair part of the time, the mills should figure overseers' salaries as a fixed expense and make prices accordingly. As for sitting around at home and getting paid for doing nothing, you know that there are always a hundred and one little jobs around a department just waiting for a slack time. There are no two ways about it: pay an overseer according to the number of hours the machinery runs and you'll get an overseer who stops thinking when the whistle blows. I'd be curious to know just how many hours a week a good overseer really does put in, both actually on the job and in thinking about problems."

Do *you* think that an overseer's wage should be based on the running schedule of the mill?

SUMMARY

DISCHARGING A WORKER.—*Almost 80% of the contributors stated that they did not believe it was proper to discharge a worker who had made a bad mistake and then talked back to the overseer. A number suggested that a lay-off of a few days or weeks, the length depending on the seriousness of the mistake, would be a better procedure. The remaining contributors believed that talking back in such a case was a serious enough offense to justify discharge.*

mistakes and find out how they occur. No employee will willingly or wantonly make a mistake and after it is done will breaking the party's morale correct the trouble? It may be that the trouble started several processes back and in that case the employee would have more knowledge than the overseer and a reason for talking back. I would suggest that all overseers get rid of the BIG BOSS attitude, realize that other people have feelings, be a helper and advisor to the help—and then watch the results. Of course the men must know that the averseer is the man in charge, but it should be done in a lifting-up rather than a knocking-down way.

G. W. SHEELEY.

Editor, Overseers' Round-Table:

It is human to make mistakes, and the person who doesn't isn't in existence at the present time.

I worked in the payroll department of a large mill for a long period, and the head was one of the most unreasonable men about this I have ever met. He would call the one who made the mistake to his desk, talk hard-boiled to him for half an hour, and then he would act like a sullen bull for a week or more. It was very monotonous to have a thing continuously thrown up to you when every effort possible was being made to eliminate mistakes.

While running the carding department of a mill, there was some roving that was mixed due to the carelessness of roving haulers and not discovered until a whole doff of the roving had been run. I gave the men a straight talk, and after that such mixups were not continuously arising.

Another instance was that of a man opening cotton who opened the wrong mixing, which I discovered before it went through. I directed him to open another mixing of the cotton that should have been opened. His reply was, "I have opened all the cotton that I am supposed to open. Let it wait until the man on the other shift comes in. My day's work is done."

Under such a case as this there was nothing else to do but to pay him up. The correction could have been attended, but he talked back, and wouldn't do anything more that was told him.

F. L. BYRD.

Editor, Overseers' Round-Table:

I believe the first rule that an executive should observe when it comes to handling men is that of self-control, especially when one is faced with an annoying situation such as the one cited in this month's topic. For, upon the overseer's reaction to incidents such as this depends that very tangible asset—employee goodwill and loyalty. Let us reconstruct the case under discussion:

First, the overseer arrives on the scene and discovers the mistake. If he is of the calm, self-controlled type he will quickly realize that the mischief has been done and that no amount of "storming" will rectify the error. Obviously, then, the first thing to do is to find out how the mistake was made so that it may be guarded against in the future. If the employee was to blame, was he careless or was he inattentive? There is a difference there which I believe is important. We have the employee who, slovenly in the performance of his duties, lacks interest in his work. Such a man is habitually careless and should be replaced. Then we have the other type of worker, careful and conscientious, who allows his attention to wander, possibly through some domestic worry. Such a man on realizing his mistake will generally feel as badly about it as the overseer, therefore very little reproof is needed.

From the employee's angle, a man feels guilty when he discovers his error. First, his reputation as a workman is involved; secondly, his job may be at stake. If he is of the careless type, neither will trouble him unduly. But the conscientious fellow can be made or marred, so far as his company usefulness is concerned, by the attitude taken by the overseer.

With regard to arguments; in the final analysis the executive who indulges in lengthy debate with a workman is lacking in judgment.

R. S. A.

QUESTIONS AND ANSWERS

Spinning and Slashing Productions

Technical Editor:

I take the liberty of writing you for the formula used for the production constant of .0623 for 10 hr. of a 1-in. front roll or .1015 for 10 hr. of a 1¼-in. roll. These constants multiplied by the front-roll speed of a frame and divided by the cotton yarn size or number will give the production in pounds for 10 hr. at 100%. I would greatly appreciate receiving the formula used to arrive at these constants and also a production formula for slashers. If constants are used in the latter case, please give me the formulas for them. (8058)

The production constant for a spinning frame with a 1-in. front roll is .0623, but for a 1¼-in. front roll it is .0779 or 0.78, rather than the .1015 you specify. The latter constant might be suitable for a metallic drawing-frame front roll with deep flutes. The constants are derived from the following formula for production:

$$\frac{\text{Dia. of front roll} \times 3.1416 \times \text{front-roll speed} \times \text{min. per hour} \times \text{hours per day} \times \text{efficiency of machine}}{36\text{ in. per yard} \times 840\text{ yd. in 1 lb. of No. 1 yarn} \times \text{Yarn number}} = \text{Production per spindle}$$

For production constant, the variables are eliminated from the formula, leaving the following:

$$\frac{\text{Dia. of front roll} \times 3.1416 \times \text{min. per hour} \times \text{hours per day}}{36\text{ in. per yard} \times 840\text{ yd. in lb. of No. 1 yarn}} = \text{Production constant}$$

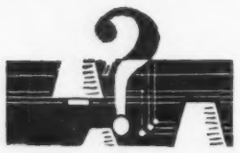
The constant for a spinning frame with 1-in. front roll is obtained as follows:

$$\frac{1\text{ in. dia.} \times 3.1416 \times 60\text{ min. per hr.} \times 10\text{ hr. per day}}{36\text{ in. per yard} \times 840\text{ yd. in lb. of No. 1 yarn}} = .0623, \text{ the production constant}$$

For a 1¼-in. front roll, the figure 1.25 in. is substituted for 1 in.

Although the usual practice in figuring production on the basis of the formula just presented is to employ for "yarn number" the number of the yarn actually being spun, Clarence Taggart, a well-known English authority, has pointed out that this practice creates an error. In his opinion, substantiated by his tests, an allowance should be made for the contraction in the yarn due to twist, which amounts to 4 or 5%. For example, if a 60s yarn is to be spun and 5% contraction is allowed, the figure used for "yarn number" should be 63, which is more representative of the length delivered by the front rolls. On the more common basis the production calculated is higher than the actual.

We do not happen to know of any mills employing a formula for calculating the production of slashers on the basis of the speeds of delivery rolls or cylinder, or on any other basis; although it is of course possible that such a formula is being used. One of the obstacles to developing a formula for this purpose is the difficulty of establishing a suitable figure for efficiency, since the stoppage due to end breakage, waiting for size solution, tying in new



beams, placing in lease rods, and other causes, varies day in and day out. Another problem is that of making a suitable allowance for the amount of size on the yarn, as the amount varies from 4 to 10%; for rough calculation, however, it is estimated at 7%. The stretch is another variable for which it is difficult to allow properly.

It seems to be a common practice among mills to weigh full beams from the warper and tag them. The loom beams are likewise weighed as they are taken from the slasher. Since the weight of the beams empty is known in both cases, it is possible, by allowing 7% for the size to approximate the production by this method. Although the figure obtained by such means is not accurate, it is closer than could be obtained through a formula based on the speeds of the machine.

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Nibs in Rayon-Worsted Blend

Technical Editor:

We are sending you under separate cover two skeins of yarn, one dyed and one in the oil, made from a blend of 60% rayon and 40% 3/8s wool. We would appreciate your opinion as to what causes the small nibs that appear very prominent in the dyed skein. The tops used were combed very well and the rayon was practically free from nibs. We have put other lots of this blend down which were practically free from these nibs. This yarn was put down on a set of open drawing suitable for 3/8s wool. For the counts 8s we gave it two gillings, then ran it through the four-spindle weigh box, the four-spindle finisher, and finally the rover. Do you think if we gave it three gillings it would blend the rayon and wool better? We used a pure white oil, manufactured and sold expressly for the purpose, straight on this blend, dropping the oil on the wool sliver at the first gill box. Would you advise a different type of oil for rayon and wool blends; also for straight rayon?

Are there any books on the spinning of rayon and wool blends; also straight rayon yarns on the Bradford system for worsted yarns? (8071)

The dyed skein shows very many white nibs. The blending should cause no rejections and the drawing operations given should be sufficient. As the product is dyed in the skein, the qualifications of the oil or emulsion should be low cost, susceptibility of complete scouring before dyeing, and ability to work satisfactorily in drawing. All of these qualifications can best be determined by the man on the job. Two things regarding the application of the emulsion should have due consideration: first, only just enough should be used to make the work run well; and second, it should be applied in as finely divided form as possible—that is, by a spray or in fine drops, instead of in the usual large drops run onto the stock from roller and tip-up chutes.

Microscopic examination of the rayon nibs shows them to be composed of short fibers, all viscose type, while the rayon top contains three types—the first a normal luster type, the second delustered and somewhat pigmented, and the third delustered with the appearance of saponification and a rough exterior.

It would be unwise to conclude from an examination of one or two tops that the lot of rayon top was uniformly free from nibs. Unless the entire lot of stock were laid down at one time and opened up with a mixing operation, there would likely be a variation in the stock itself, as it is a waste product consisting of bales accumulated from different runs in the producer's plant. In addition, it is possible for a change in setting during the running of the lot or for a variation in the care and attention given, to produce a variation in the amount of nibs.

If it is found by careful examination of the whole lot of rayon top that it is uniform in regard to nibs, it will be necessary to examine it on a black velvet board for the percentage of short fibers. An excess of short fibers in the drawing can undoubtedly produce nibs, especially, as in this case, where the percentage of rayon in the blend is high. Short fiber may be made in the drawing in several ways—by too-large drops of emulsion together with too high a front-roll pressure, especially in the gilling, producing "cut work"; by a pin embedded in the gill-box apron or drawing roll; by drafts blowing fly into the work; by lack of sufficient cleaning, especially of the fallers and possibly by under-ratching.

We do not know of any books on the use of rayon in the woolen and worsted mills, but recommend that you consult the following articles which have appeared in TEXTILE WORLD: "Staple Rayon and Rayon Waste," Sept. 27, 1930; "Preparing Rayon Waste," Sept. 26, 1931; "Rayon-Woolen Blends," Sept., 1932; and "Selection of Rayon Waste" Nov., 1932.

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Holes in Hosiery

Technical Editor:

We are inclosing three stockings which will indicate the type of holes we have been getting in our work, both in the gray and after the stockings have been finished. In the gray, they come in the form of one, two, or three very tiny round holes, which when subjected to the slightest strain, immediately become large and run. Can you tell us what is causing these holes. (8049)

We have seen similar trouble develop from heavy or rough rings worn by gray-goods inspectors, especially where the inspecting operation is carried out on metal inspecting forms. The finished samples submitted carry so many holes that the ring theory looks a little doubtful, and we rather subscribe to the theory of vermin or rodent. The holes are of the type frequently caused by roaches or moths. The black carpet beetle and the Buffalo moth are frequently found in gray-stock bins and

QUESTIONS AND ANSWERS

are very destructive. Likewise, the ordinary roach will cut raw-silk hosiery to some extent. We strongly advise careful inspection of gray-stock bins for moth and other insect trouble. Insects will require a much more thorough investigation than mice or rats.

It is rather difficult to form a definite opinion as to the cause of the holes shown in the stockings submitted. A better opinion could undoubtedly be based on samples of gray goods rather than finished goods.

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Resist Spots in Acetate-Rayon Fabric

Technical Editor:

On certain qualities of acetate-rayon goods (acetate warp, viscose filling) we have some difficulties with the penetration in dyeing, due apparently to the fact that the goods are not perfectly clean when they come from the scouring. At times these unpenetrated places take the form of distinct spots as on the enclosed sample.

We have not been entirely successful in overcoming the trouble with such obvious remedies as increasing the time in scouring, using a stronger soap solution, a higher temperature, etc. We are therefore asking your advice on the following points: Are there any special additions we could make to the scouring baths to render them more effective? Our present scouring baths are made up with olive oil soap only. Are there any other special tricks or precautions in the scouring which we may try? Can you make any special recommendations concerning the dyeing? Which is the most effective method for obtaining penetration on such qualities as are difficult to penetrate? (8064)

The trouble encountered with these goods seems to be the result of improper handling of the fabric during the dyeing. Examination of the sample indicates that the boil-off is satisfactory. A portion of the sample was stripped and redyed in order to check on the possibility of the goods having been saponified locally. This was not the case, as the redyed portion was perfectly even in the locality of the original spot. We believe, therefore, that the cause of poor penetration and unevenness can be traced to one of two sources; namely, overcrowding of the machine, or too rapid a rise of temperature of the dyebath. Another possible factor is too low a temperature during the entire dyeing period.

We suggest the following routine for handling this type of work: (1) Boil-off in soap bath, either on strings or in the becks—the latter method is probably safer if the goods have been given a hot water treatment previous to loading into the becks. Flush the tanks or beck well before dropping the bath to remove any dirt and oil which might later cause trouble. Rayon often is twisted with the aid of mineral oils that do not emulsify with the boil-off agents permissible when acetate yarns are also present. (2) For the dyeing operation make up the loads sparingly. The standard 12-ft. beck will not carry consistently more than 1500 yd. of this type of fabric and dye it right every time. Pieces should not be over 80 yd. long. Carry the liquor as high as possible. Establish a dyeing method somewhat as follows, to be varied to suit individual requirements: Do not add at one time all the dyestuff required to dye the acetate. Spread it over three adds at about 20-min. intervals. The dyestuff for the rayon is not so important, but may be divided along with the rest, as this practice helps to retard the naturally faster pick-up of the rayon colors. Start the dyeing at a low temperature—about 100° F. Raise the temperature slowly, approaching the full dyeing temperature of 170 to 180° F. after at least 1 hr.

As a dyeing assistant, a high-grade of sulphonated oil is satisfactory; a poor one will break up and cause oil spots. The sulphonated alcohols are nearly foolproof; they aid in leveling and defeat hard water to a certain extent.

These suggestions are not new, but in the rush of business they are often lost sight of. Only the utmost diligence will suffice in processing acetates successfully day after day, and attempting to hurry the dyeing is almost certain to result in spotty and uneven goods.

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Bleaching Cotton Gauze

Technical Editor:

Kindly advise me as to the methods employed in bleaching light-weight cotton gauze—say 23-yd. goods. (8074)

Handling of light-weight cotton gauze in such a manner as will be economical, and at the same time keep fraying of the fabric or disturbed filling to a minimum, is a problem which has caused considerable worry to many mills.

One method which was employed some three or four years ago in several plants was to take the cuts from the gray bale, throw out the ends as for sewing and place the goods directly into the kier without sewing, being careful to lay them evenly for proper kier circulation. The goods were afterwards transferred in the same manner to a Bennett kier, treated with bleaching solution and antichlor, and thoroughly washed by the pumping system. This method presented somewhat of a problem, however, when the goods were to be moved for tentering, drying, etc. For this reason, at least one well-known manufacturer and bleacher of gauze in large quantities has resorted to a different method of handling.

The fabric comes to this particular plant from the gray mill in large rolls of not less than 2,500 to 3,000 yd. to a roll. Four of these rolls are carried on a rack, the fabric of course being in the open width. Four thicknesses of cloth are superimposed one above the other and passed directly through a special rope saturator directly into a motor-pump-and-heater kier for pressure boiling with alkali. After boiling, the goods are thoroughly washed with the pump, using hot water. The goods are then reeled over into Bennett kiers, where they are bleached, anti-chlored, and washed. When this method is followed, the fabric is subjected to the minimum amount of handling. Practically no twisting of the fabric occurs if the roll rack, saturator kier, and Bennett kiers are in a direct line.

From the Bennett kiers the fabric is opened four-ply in a direct short pull over a special scutcher working in direct connection with a light roller-bearing two-roll water mangle with rubber-covered rolls and four ball-bearing frilling folders, each laying down one strand. It is necessary, of course, to install ball-bearing leash rods to separate the strands as they come away from the water mangle before entering the folders. The goods are laid into trucks or boxes and are now ready for the drying and tentering. The range usually consists of three to six drying cans heated with low-pressure steam, a compensator of the ball-bearing type, a 60-ft. housed and heated tenter operating at high speed, and an automatic cutting-off winder.

▼

Silk Fabric Has Brown Cast

Technical Editor:

We are inclosing herewith a sample of pure-dye crepe de chine, white unbleached. You will notice between the points indicated by us very distinctive lines in the filling direction of a brownish yellow cast. We do not think that this discoloration is due to dirty filling, which would show up either in gray or black lines. Furthermore, in processing crepe filling, we have taken every precaution in the steaming process to prevent rust spots. Will you let us have your opinion as to what caused this imperfection. (8085)

We have examined the sample of pure-dyed crepe de chine and find that the defect is due to the improper processing of this fabric. Apparently too much oil was used and the goods were not treated properly in the bath. The brownish yellow cast appears to be due to the use of a heavy tint, which was not properly boiled off. With piece goods of this type and color, it is advisable to bleach the fabric, as this defect occurs frequently in colors and constructions of this type. Goods now having this defect can be refinished, and this will remedy the trouble.

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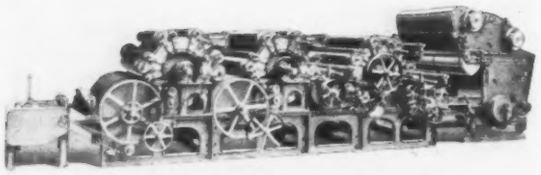
Mohair Frieze

Attention is called to an error in the question and answer "Mohair Frieze" published on pages 102 and 103 of our December issue. In the last paragraph of the answer the phrase "Instead of two warps," which refers to the pile, should be omitted. If the pile amounts to 50% of the ground warp, two piles must always be used for satisfactory results.

NEW MACHINERY



Metallic Worsted Card

The worsted industry has traditionally entertained the belief that metallic clothing would cut the fiber and hence be impractical for carding worsted. Proctor & Schwartz, Inc., Philadelphia, however, now announces a new card equipped on all cylinders, including workers, strippers, and doffers, with a metallic clothing so cut as to be free of fins or metal burrs. This clothing, they report cuts less fiber than is usually the case with ordinary clothing. Certain tests which have been conducted in the research department of the machine builder and in the several mills which have made trial installations—such as Samuel Hird & Sons, Inc., Passaic, N. J.; Thomas Wolstenholme Sons & Co., Inc., Philadelphia; Botany Worsted Mills, Passaic, N. J.; Arlington Mills, Lawrence, Mass.; and Hudson Worsted Company, Hudson, Mass—are reported to show an average increase in production of 70.6% and an average decrease in noilage of 13.8% on a variety of wools ranging from fine to coarse. Tests on the finished top show a marked reduction in the amount of burrs and other vegetable matter in the wool.

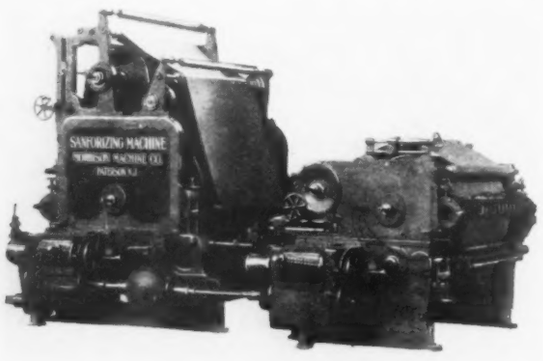
Since the stock does not embed itself in the clothing, stripping is eliminated, except possibly once a year to remove burrs. The elimination of fancies reduces the amount of nep. No grinding is required. The elimination of stripping and grinding not only reduces the amount of stopped time and eliminates certain labor costs, but abolishes the light running and low production as the clothing absorbs fiber after it has been cleaned.

Reclothing will be no more frequent than usual, it is asserted, and its cost will be relatively low due to the reduction which has been made in the size of various clothed parts. This reduction in dimensions is an interesting development in itself. Investigations convinced the designers that there is no benefit in having a stripper any further from the preceding worker than the length of the longest fibers to be carded or in having the working circumference of the workers exceed that length. A reduction in these dimensions as well as the elimination of the fancies makes possible a smaller circumference of the main cylinder. As a result, the workers on the new card are 8 in. in diameter, strippers are 4 in.; and the cylinders and doffers are all 30 in. The length of the card, including feeder and baller, is about 26 ft., and the width is less than 9 ft. The power requirement is somewhat less than 3 hp.

The production attained on former models can be equalled by the new machine with less than half the power and floor space. When the feed is cut off, the card strips itself free of fibers within 2 min., it is reported. It is equipped with micrometric feed and improved burring section. The company is prepared to build metallic woolen cards.

Duplex Finishing Palmer

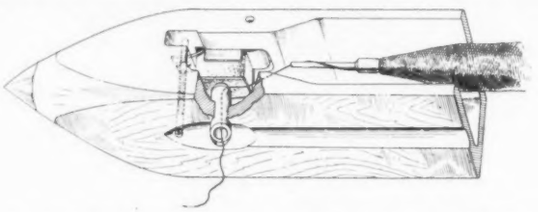
Morrison Machine Co., Paterson, N. J., recently announced the development of its Duplex Palmer, designed to obtain a uniform finish on both sides of the fabric. This machine is equipped with a complete set of electrically heated shoes, similar to those in the standard type Palmer used in Sanforizing, but these can be removed in a few minutes of time and a plain guide roller substituted therefor. This plain roller is said to avoid additional shrink and to secure a new variety of finish. It is also used where finish is not important, as on some coarser fabrics where additional yardage is desired. Not only is the machine capable of securing the two-side finish to the fabric, but also it is said to be capable of obtaining a considerable increase in the amount of shrink, if that is desired. The cloth passes from the large main Sanforizing Palmer and is automatically reversed for its entry into the Duplex machine. Both Palmers have the electrically heated shoes equipped with automatic lifting devices so that immediately after the machine comes to a standstill, the shoes automatically rise from the fabric and the blanket and the electric current is cut off. When the machine starts, the shoes automatically return to their position and the current goes on immediately. Thus, there is no possibility for the operator to neglect removing the shoes from the blanket or fabric, regardless of the reason for stopping the machine. The machines are both mechanically and electrically provided for separation, so that the main Palmer may be used independently of the Duplex machine. When the clutch is shifted to disengage them mechanically, electrical disengagement is obtained automatically.



Shuttle for Lastex

When Lastex is woven as filling, it must be stretched exactly to the extent which it is desired to have the fabric stretch after finishing. Because Lastex has a high elasticity, this stretch necessitates a nice adjustment of the tension in the shuttle. Ordinary shuttle tensions were not found entirely suited to this work; and therefore H. Dolan of Adamson Bros. Co., New York, distributor of Lastex, devised a special shuttle tension for the purpose. The accompanying diagram shows his tension as applied to a silk shuttle by I. A. Hall & Co., Paterson, N. J.

The device consists primarily of a soft rubber sponge mounted on a metal plate opposite the shuttle eye. Fur is mounted on the working surface of the sponge for contact with the yarn. The metal plate is pivoted at the end away from the point of the shuttle and can be swung toward or away from the eye to give any tension desired by means of a finely threaded screw. The screw may be turned by a screwdriver applied outside the shuttle.



Constant-Level Oil Control

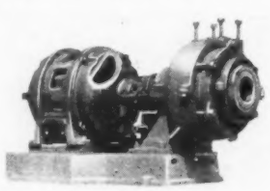
The Lunkenheimer Co., Cincinnati, has introduced a device to maintain automatically a constant oil level in ring-oiled bearings or anti-friction bearings suitable for oil-bath lubrication. This oil control device operates on the liquid seal principle and will not feed as long as the oil level is at or above the beveled end of the shank. When the oil level in the bearing drops below this point, the liquid seal is broken and air is permitted to enter the bottle. The collar has a vertical adjustment range of ½ in.

Stainless Steel Kier Assemblies

An assembly of stainless steel wire rope for holding down the load in bleaching kiers has been introduced by the Hazard Wire Rope Co., Wilkes-Barre, Pa. Having the advantage of light weight, yet with high strength as compared with chain, this assembly is designed to resist the effects of peroxide solutions, steam, etc. The complete assembly, built of 18-8 stainless alloy, weighs less than 25 lb. It consists of a center ring, 12 in. in diameter, to which are attached six ropes with hooks at the other ends for hooking into the holes in the angle irons or other attachments on the inside wall of the kier. Ring, hooks, rope, and attachments are all made of stainless steel. The ropes are fastened permanently to the ring by eye attachments as well as to the hooks by patented fittings. These assemblies are supplied for any diameter kier.

Centrifugal Acid Pumps

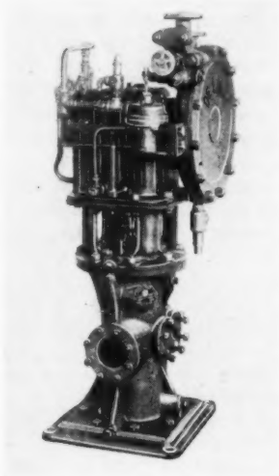
Designed for handling acids, alkalis, and other corrosive chemicals, with the exception of hydrofluoric acid, is a series of centrifugal acid pumps recently developed by the United States Stoneware Co., 50 Church St., New York. All parts coming in contact with the solution are made of chemical stoneware. Among the features of these pumps are: compactness resulting from special mounting of ball-bearing motor; double packing gland which prevents spraying; dual impeller of chemical stoneware, with adjustable impeller clearances and said to function satisfactorily at 1,750 r.p.m.; temperature compensation to maintain constant gland pressure; standardized parts; corrosion-resisting alloys used in all metal parts that are subject to injury by fumes of highly volatile liquids; Timken bearings which may be taken up without altering impeller alignment. Built in standard sizes: 1¼-in., 2-in., and 3-in.



Fuel Oil Pump

DeLaval Steam Turbine Co., Trenton, N. J., recently announced a steam-turbine driven fuel-oil pump, designed for continued operation, which will deliver oil to burners or to a lubricating system at any rate up to 500 gal. per min. The unit consists of a rotary displacement pump set with the shaft vertical and driven through a worm-reduction gear by a high-speed steam turbine, the casing of which is mounted on the gear casing. While this type of pump is in some cases directly connected to electric motors or to steam turbines, and is adapted to run at ordinary turbine speeds, the use of the speed-

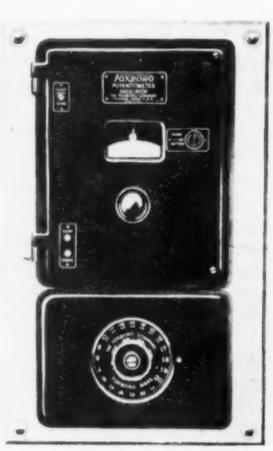
AND PROCESSES



reducing gear makes it possible to combine good steam economy with the simplicity and low cost of a velocity stage turbine with only one pressure stage. The speed of the turbine is controlled by a small hydraulic governor operating a throttle valve. Oil for lubrication of the worm and gear bearings and teeth is provided by a self-contained system.

Indicating Pyrometer

An indicating pyrometer, employing the potentiometer system of temperature measurement, has been announced by the Foxboro (Mass.) Co. The pointer of the galvanometer swings just above the temperature dial and is brought to balance at the same hair-line index which marks the measurement on the temperature scale. The balancing and reading of the instrument are practically one operation, as the hair line is part of a glass window through which both the pointer and the scale can be viewed at the same time. The 6-in. dial provides 17 in. of actual temperature scale, thus increasing the accuracy of readings. The galvanometer has the double suspension similar to that used in Foxboro potentiometer control pyrometers. The unit is mounted in a moisture-proof, black enameled case. By the use of a selector switch, the indicator can be used to give temperature readings from any number of thermocouples located at different points.



Roving-Frame Drafting

For the past year or so Saco-Lowell Shops, 147 Milk St., Boston, have been developing a new and radically different method of drafting for roving frames. The work is now nearing completion. Mechanically the equipment is said to be extremely simple without belts or complicated rolls. While its drafting capacity is reported to be far beyond anything now offered, the arrangement is such that at no single time is the stock subjected to a longer draft than is at present standard practice. The purpose of the development is believed to be an improvement in the method of drafting to give better results than have hitherto been possible. A detailed announcement is expected to be made shortly.

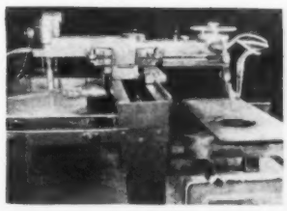
Device for Removal of Condensate

For removing condensate from steam condensing devices, kettles, presses, heating, and processing machines, The Coe Mfg. Co., Painesville, Ohio, has developed a device which has no

moving parts, depending for its operation upon the thermodynamic properties of steam and hot water to regulate the flow through the apparatus. This device, known as the "Drainator," is equipped with a gage glass which indicates constantly whether the unit is functioning correctly. Other features of this apparatus are: means for handling entrained air, the capacity of which increases in proportion to the amount of air present; designed for operation on any steam pressure up to the mechanical strength of its body without any exchange of parts; by-passes not required nor recommended; available in various sizes from ½ to 1½ in., in a range wide enough to accommodate any drainage condition. This device is an improved design of the originial Chevalier Drainator, which was developed some time ago.

Stationary Cutting Machine

The Linde Air Products Co., 30 East 42nd St., New York, has introduced a stationary cutting machine, known as the "Pantosec," especially suitable for cutting dies, cams, and other parts that require smooth and accurate cutting. With a cutting range of 44 in. longitudinally and 20 in. laterally, it does straight-line cutting, angle cutting, beveling, circle-cutting and intricate shape-cutting. The machine requires floor space of only 72 x 83 in.



The unit consists of a carriage mounted on three-point supports. The piping for gases is enclosed in the carriage, and all drives are protected by dirt-proof casings. Wiring is concealed and switches and controls are clearly labeled and easily accessible. Motors may be supplied for either 110- or 220-volt current.

Portable Electric Blower

The Breuer Electric Mfg. Co., 852 Blackhawk St., Chicago, has announced a portable electric blower for blowing dust out of motors and machines, vacuum cleaning bins, stock rooms, or space that collects dirt, and for spraying insecticides. The blower is operated by a 1-hp. ball-bearing motor.

Celoron Sprocket Coupling

Continental-Diamond Fibre Co., Newark, Del., has announced a sprocket type coupling in which the female end is molded of macerated Celoron, a material used for the construction of silent gears and valve disks. This laminated or molded macerated synthetic material is said not to be affected by hot or cold, oil or water, gasoline, and many acids.

Advantages of this new coupling are said to be: light weight, smooth exterior, good properties as an electrical insulator, and design which insures an equal distribution of the load. The coupling is available in seven standard types.

Electrode for Welding Cast Iron

For welding cast iron by the shielded arc process, an electrode, known as "Ferroweld," has been announced by The Lincoln Electric Co., Cleveland, Ohio. This electrode has a steel core surrounded by a heavy flux coating which protects the arc from gases injurious to the weld which are present in the atmosphere. An outstanding advantage claimed for "Ferroweld" is the remarkably low heat with which it can be used, thus reducing the possibility of cracking. The electrode is manufactured in only one size—¼ in.—and is used with approximately 80 amperes of current. The

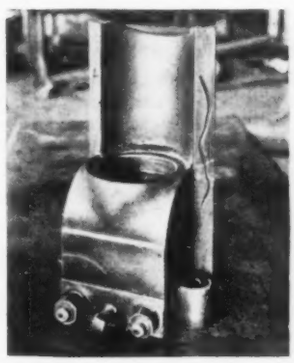


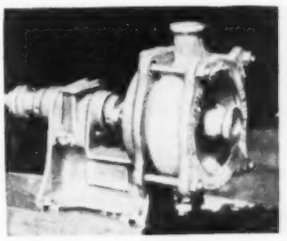
illustration shows a weld made on a punch press ram with this electrode. The ram is 22 in. wide and 1½ in. thick at the break.

Non-Metallic Disk Valve

The Lunkenheimer Co., Cincinnati, has announced a non-metallic disk bronze valve suitable for 150-lb. steam pressure and 300-lb. gas-liquid pressure. The valve is equipped with deep non-heat malleable iron handwheel and with extra deep stuffing box. Stem is made of heavy rolled bronze and the disk holder is of the slip-on type. These valves are available in several designs—globe, angle, horizontal and angle check, spring check for compressor service.

Centrifugal Pump For Corrosive Chemicals

The Duriron Co., Inc., Dayton, Ohio, has developed a centrifugal pump for handling corrosive chemicals, especially suitable for laboratory use and for other applications where head and capacity requirements are fairly low. This pump (Model 2A) has a 1-in. suction, a 1-in. discharge, and at 1,750 r.p.m. the head and capacity range from 2½ gal. per min. at a 25-ft. head to 25 gal. per min. at a 5-ft. head, figures being based on water. It is available in either belt or direct motor drive, and has a closed-type impeller. The pump may be obtained in several corrosion-resisting alloys for general acid service, for hydrochloric acid, and for sulphuric acid at all temperatures.



THE PERSONAL PAGE

W. D. Carter has been made president of the Carolina Cotton & Woolen Mills Co. and **Luther H. Hodges** has been promoted to vice-president and general manager. Messrs. Carter and Hodges were formerly joint general managers. Mr. Carter replaces **H. P. Shedd** who will devote his entire time to his position as vice-president and general manager of Marshall Field & Co., wholesale.

William A. Barden has been elected president of the recently formed Neisler Mills Co., New York, selling organization for Neisler Mills. **Allen E. Julin** and **Harry E. Carls** will serve as vice-presidents and **George E. Weber** as secretary and treasurer.

R. P. Dicks was elected president and treasurer of the Sanford (N. C.) Cotton Mills at the annual meeting held Jan. 19. He succeeds **J. C. Watkins. W. R. Williams** was named executive vice-president and **E. M. Underwood** secretary and assistant treasurer.

Maitland Lee Griggs was elected vice-president and a director of the Alexander Smith & Sons Carpet Co., Yonkers, N. Y., at the annual meeting Jan. 19. Other officers were re-elected.

Fessenden S. Blanchard, of Pacific Mills, New York, has been appointed assistant deputy administrator of the NRA, in connection with the textile codes. He is now in Washington, on a four months' leave of absence from his company.

Magruder Dent, of Joshua L. Bailey & Co., was reelected president of the Association of Cotton Textile Merchants of New York last month.

James J. McNamee has severed his connection as president of the Spa Knitting Co., Ballston, N. Y., and disposed of his interests to **Floyd J. Shutts. E. L. Nertney** has been appointed general manager.

Henry Clavin was elected vice president of the Faith Knitting Mills, Averill Park, N. Y., at the annual meeting, succeeding **W. C. Geer.**

A. Clinton Swift has been elected treasurer of the Brookside Mills and of the Wellington Mills and will make his headquarters in the Boston office of Wellington, Sears & Co. His duties as sales manager of the New York office of the company will be taken over by **W. O. Hay** and **Ronald Campbell.**

J. Frank Morrissey, formerly superintendent of the Interlaken Mills, Harris, R. I., has been appointed agent of the Grosvenordale Co., North Grosvenor Dale, Conn., to fill the vacancy caused by the recent death of **John F. Reardon, Sr. John F. Reardon, Jr.,** who has been acting agent, has resumed his duties as superintendent.

George W. Robertson, general superintendent of the Riverside & Dan River Cotton Mills, was the guest of honor at a banquet, held on Jan. 20, in recognition of his completion of 50 years of service with the company. About 350 guests attended, with Robert R. West, president, acting as chairman.

A. M. Nail, formerly secretary and treasurer of the Shuford Hosiery Mills, Inc., Hickory, N. C., has disposed of his interest and severed his connection with these mills.

Frederick M. Feiker. who has been conducting the Textile Foundation's survey of textile education, has been appointed executive secretary of the American Engineering Council, with headquarters at Washington, D. C., succeeding **Lawrence W. Wallace,** who resigned to become vice-president of the W. S. Lee Engineering Corp.

G. D. Truslow, who has been superintendent of the Carolina Cotton & Woolen Mills, Draper, N. C., has been promoted to general superintendent of these mills, the Spray Woolen Mills and the Rhode Island Mills, at Spray, N. C.

A. Whittmann has resigned his position as production manager of the Warwick (R. I.) Mills to become assistant agent of the Bates Mfg. Co., Lewiston, Me.

Old Boss Carder Passes

Michael W. McCarthy, a widely known New England boss carder through his 60 or more years in the business, and former instructor in carding and spinning in Lowell Textile School, died at Lawrence, Mass., Jan. 10, at the age of 90. Mr. McCarthy held positions in many leading mills, among which were Globe Mills, Utica, N. Y.; Washington and Pemberton Mills, Lawrence, Mass.; Gonic (N. H.) Woolen Co.; North Billerica (Mass.) Mills; Lymansville (R. I.) Mfg. Co. He was often engaged by outside manufacturers to set up cards and other machines when a crucial test was involved. He ground the first card clothing that Davis & Furber Machine Co. of North Andover, Mass., manufactured, in the Pemberton Mill back in the early '70s. He set up and put in operation the first "Roy" grinder purchased by the Arlington Mills, Lawrence, Mass. He also invented an eccentric motion on a certain part of the card. It was said of him that he could do anything with a card except make it talk.

A strange coincidence in the life of Mr. McCarthy was that as a boy 16 years of age he assisted in the work of rescue at the collapse of the Pemberton mill in 1860. When the mill was rebuilt he worked there for six years as boss woolen carder, and died on the anniversary of its fall, Jan. 10, 1934, 74 years later.

Mr. McCarthy wrote many articles on carding for textile papers. He was a boss carder for 55 years. He leaves four sons and three daughters.

L. J. Baker has been promoted from overseer of carding and spinning to asistant superintendent of the Spray (N. C.) Woolen Mills.

Clarence Reid has been named overseer of the dressing department in the Central Village, Conn., mill of the Wyandotte Worsted Co.

J. O. Newton has been promoted to general foreman in the two plants of the Carolina Cotton & Woolen Mills, Draper, N. C.

C. T. Mumford, formerly with Hunter Mfg. & Commission Co., is now a southern sales representative of Riverside & Dan River Cotton Mills.

Carrol J. Dore, for the last five years with Monument Mills, has been appointed sales representative of Neisler Mills Co., recently formed selling organization, in the Chicago territory.

Alex S. Monroe has been elected secretary of Hannah Pickett Mills, Rockingham, N. C.

J. F. Eastham, formerly with Hamlet Textile Co., Pawtucket, R. I., has accepted a position with Stonecutter Mills Co., Spindle, N. C.

P. W. Ellis has been appointed superintendent of Sibley Mfg. Co., Augusta, Ga., succeeding Walter Dillard, Jr., who recently resigned.

Robert B. Horsley, formerly superintendent of West Boylston Mfg. Co., Montgomery, Ala., has been appointed production manager and overseer of slashing and warp preparation at the Opelika (Ala.) plant of Pepperell Mfg. Co.

Ross G. Walker, treasurer of the Hamilton Woolen Co., Southbridge Mass., has been elected a director.

E. B. Knecht, for the last several years superintendent of the Onondaga Silk Co., Ogdensburg, N. Y., has been transferred to the concern's branch at Easton, Pa., as assistant general manager.

Will E. Cusick has been appointed sales manager of the Vanity Fair Silk Mills, Reading, Pa.

John Hayes, manager of the Maurice Hosiery Mills, Thomasville, N. C., for many years, has resigned to accept a similar position with a hosiery mill at Mount Airy, N. C.

W. K. Stringfellow, cost accountant for the Aragon-Baldwin Cotton Mills, Inc., Chester, S. C., has been transferred to Duncan Mills, Greenville, S. C.

E. A. Hall has resigned as superintendent of the Social Circle (Ga.) Cotton Mills, and has been succeeded by **J. R. Walton,** formerly overseer of carding, Cannon Mills, Plant No. 1, Kannapolis, N. C.

J. W. Jenkins, formerly superintendent of Hannah Pickett Mills, Rockingham, N. C., has been appointed superintendent of Steele's Mills, Rockingham, succeeding **J. C. Montjoy,** who recently resigned.

Fred W. Howe has been placed in charge of bedspread, drapery, damask and cotton blanket departments of Cannon Mills, Inc., New York.

David Goldman has been appointed sales manager for Jos. Berlinger Co., New York. He was formerly with A. D. Juilliard & Co., and the Bloomsburg Silk Mill.

Elmer P. Scott has left U. S. Finishing Co. and has joined M. Lowenstein & Sons, Inc., New York, where he will have charge of his cretonne, drapery and ticking departments.

Luther J. McGinty has resigned as superintendent of dyeing of Wiscasset Mills Co., Albemarle, N. C., and has accepted a position in the dyeing and experimental department of the American Bemberg Corp., Elizabethton, Tenn.

J. W. Swiney has been appointed assistant superintendent of the bleachery and finishing department of Fulton Bag & Cotton Mills, Atlanta, Ga.

J. F. Childs, has been promoted to overseer of weaving at the Lanett (Ala.) Mill of the West Point Mfg. Co.

Ivy Cowan, secretary, Stonecutter Mills Co., Spindale, N. C., has also assumed the duties of superintendent, succeeding **J. W. Bost,** who recently resigned to accept a similar position with the Belton (Tex.) Yarn Mills.

Kelly Moses, formerly superintendent of weaving at the Kannapolis plant of Cannon Mills Co., has been transferred to the Social Circle, Ga., unit.

Joseph P. Walton has been promoted from overseer of carding to superintendent at the Social Circle (Ga.) Cotton Mills Co.

George Bruton, formerly of Mt. Gilead, N. C., has become cotton buyer for the Efird Mfg. Co., Albemarle, N. C.

W. R. Thigpen is now superintendent of the napping and cloth divisions of Mooresville (N. C.) Cotton Mills.

Obituary

Walker D. Hines, aged 64, president of the Cotton - Textile Institute from its formation in 1926 until 1929, and chairman of the board from 1929 to 1931, died in Merano, Italy, Jan. 14. Mr. Hines was a prominent lawyer and director - general of American railroads in the final year of governmental control.

Jesse J. McMurry, aged 84, president, Belmont Cotton Mills Co., and vice-president, Shelby Cotton Mills, of Shelby, N. C., died at his home, Jan. 5.

William A. Schoenheit, aged 64, president of the Spray (N. C.) Cotton Mills, Inc., died at his home in Asheville, N. C. on Jan. 20.

Charles C. Ormsby, aged 77, former president of the Ormsby-Morris Knitting Co., Waterford, N. Y. is dead.

H. S. Duckworth, vice-president of the Cranston (R. I.) Print Works, died at his home in Cranston on Jan. 22.

John Walton, aged 57, proprietor of Walton Hosiery Mills, Statesville, N. C., who went South from Philadelphia, Pa., about 20 years ago, died suddenly, Jan. 9.

Walter D. Phillips, vice-president of the Diamalt Co., and responsible for the introduction of Diastafor in 1908, died at his home in Scarsdale, N. Y., Jan. 31.

John B. McPherson, aged 70, assistant secretary of National Association of Wool Manufacturers, died at his home in Watertown, Mass., Feb. 1.

Dr. Ernest Cadgene, founder and president of Lyons Piece Dye Works, Paterson, N. J., died suddenly on Feb. 4. He was born in Lyons, France, in 1879, and was a pioneer in metallic printing in this country.

Charles Sidney Bottomley, aged 66, vice-president of the Hockanum Mills Co., Rockville, Conn., died Jan. 6.

Charles Finsilver, aged 56, head of the Finsilver Textile Co., died at his home in New York, Jan. 22.

John Stansfield, aged 66, vice-president of Stansfield's, Ltd., Truro, Nova Scotia, died on Jan. 22.

Oliver P. Zoll, general manager and treasurer of the Atlanta plant of the Western Shade Cloth Co., died recently.

H. C. Jennings, aged 56, superintendent of the Jennings Cotton Mills, Lumberton, N. C., died recently.

Andrew Gibson, aged 67, a director of Davis & Furber Machine Co., North Andover, Mass., died at his home there on Jan. 13. He was connected with the firm for over 35 years.

George M. Dailey, aged 76, who engaged in the textile business for over 50 years and was with J. P. Stevens & Co., New York, for over 30 years to the time of his retirement several years ago, died at his home in Katonah, N. Y.

George Everett Clapp, aged 62, for many years in charge of erecting machinery for the Whitin Machine Works, Whitinsville, Mass., died on Dec. 31.

J. W. Zachary, aged 59, manager of the Cooleemee (N. C.) plant of the Erwin Cotton Mills Co., died Jan. 24.

Centenary of Jacquard

The 100th anniversary of the death in 1834 of Joseph Marie Jacquard, inventor of the jacquard loom, will be observed in his native city of Lyon, France, March 8 to 18, during the spring meeting of the Lyon Fair. The commemoration will include an exposition of looms, fabrics, and documents; a theatrical performance; and a memorial service.

Committee D-13 Meeting

The spring meeting of Committee D-13 of the American Society for Testing Materials will be held at Wardman Park Hotel, Washington, D. C., Thursday and Friday, March 8 and 9, in conjunction with the regional meeting of the Society during that week.

Research Course at M.I.T.

Massachusetts Institute of Technology, Cambridge, is again offering a special course in textile research for executives, laboratory men, and others, beginning March 2 and continuing on Fridays and Saturdays for six weeks. Instruction on routine mill testing is included, as well as more advanced information of scientific character.

Textile Calendar

Federated Textile Industries, Inc., Annual Dinner, Waldorf-Astoria, New York, Feb. 13, 1934

Second Knitwear Industrial Exposition, Grand Central Palace, New York, Feb. 12 to 16, 1934.

National Knitted Outerwear Association, annual meeting, New York, during week Feb. 12 to 16, 1934.

Underwear Institute, Annual Meeting, Mayflower Hotel, Washington, D. C., Feb. 20, 1934.

Committee D-13 American Society for Testing Materials, spring meeting, Wardman Park Hotel, Washington, D. C. Mar. 8-9, 1934.

National Assn. of Waste Material Dealers, annual meeting, Hotel Astor, New York, March 19 to 21, 1934.

Knitting Arts Exhibition, Commercial Museum, Philadelphia, April 23 to 27, 1934.

National Cotton Week, May 14-19, 1934.

Committee D-13 American Society for Testing Materials. Annual Meeting, Chalfonte-Hadden Hall, Atlantic City, N. J., in week of June 25 to 29, 1934.

Southern Textile Exposition, Eleventh Annual Exhibit, Textile Hall, Greenville, S. C., Oct. 15 to 20, 1934.

Prepare for N. C. Textile School Style Show

North Carolina State College, Raleigh, N. C., is at work on plans for the annual textile exposition and style show to be held in April. New weave patterns created by students of the Textile School are being submitted to domestic science classes of girls' school in the State. Materials for a garment of the selected patterns are furnished the girls, who construct the dress or cloak, and model it in the style show.

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Textile Alumni Dine

What was planned as the first annual dinner of New York alumni of textile schools took place Jan. 30 at the Arkwright Club and was attended by alumni of the New Bedford, Fall River, Lowell, Philadelphia, Clemson, Georgia Tech., and North Carolina State schools. The principal address was by Senator E. D. Smith, South Carolina, on inflation. Other speakers included J. T. Broadbent, Standard Textile Products Co.; and R. M. Harriss, Harriss & Vose.

NEW PUBLICATIONS

Textiles and the Microscope; by Edward R. Schwarz; McGraw-Hill Book Co., Inc., New York; $4.00.

In its April 27, 1929, issue, TEXTILE WORLD began publishing a series of articles by Professor Edward R. Schwarz, of the Massachusetts Institute of Technology, on a subject at that time perhaps a little terrifying to the average textile man—the use of the microscope. We called the series "Don't Be Afraid of the Microscope," because, although it was expected to be the last word (as well as almost the first word) on the rather involved subject of textile microscopy, it had also the very important mission of bringing the microscope to the understanding and appreciation of the average textile man. "We are afraid of what we do not understand," Professor Schwarz wrote. "Much of the fear and distrust or disdain of microscopic apparatus so prevalent in the industry is due to lack of knowledge about it. The microscope may be made simple and easily understandable."

Simple and easily understandable Professor Schwarz proceeded to make it. If the editors had had any misgivings about the reception which the series was to have, their doubts were soon dispelled when congratulatory letters began to arrive; and a few issues after the series had commenced its run, the supply of back numbers became exhausted. Up until the very end of the series (the last article appeared in the August, 1933, issue) the editors were hounded with requests for complete sets of the instalments already published—a demand which could not be met. The best that could be done was to promise that as early as possible the articles would be reprinted in a book.

And here is the book. Many of the early articles have been revised and brought up to date. New material has lately been added. Therefore the new publication not only places the author's work in handy form but supersedes his series of articles. The book treats in detail with the apparatus and its manipulation, the technique of specimen preparation, the means for quantitative determinations, and the various sorts of accessory equipment which can be advantageously utilized. An individual chapter is devoted to each of the following subjects: microscopes for textile research, manipulation of the microscope, illumination, accessory equipment, micrometry, specimen mounting, preparation of cross sections, recording data, photomicrographic apparatus, photomicrographic technique, stereoscopic photomicrography, polarized light, application of polarized light, fabric analysis, yarn analysis, and fiber analysis.

Professor Schwarz is preeminently fitted to introduce the microscope to his readers. For years he has been closely identified with textile technology, and microscopy in particular. He has himself helped to develop the microscope to an ideal instrument for a wide range of textile purposes. In 1933 he received the highest honor which the textile industry offers—a fellowship in the British Textile Institute "in recognition of his notable contributions in the field of textile technology and research."

A book of this character is more than a book of interest and value to the individual reader. It is a contribution to the fundamental progress of the industry to which it is directed. Textiles, far more than the average industry, deals with microscopic materials and knows too little about them. It is time that the microscope became a familiar and extensively used instrument in every mill laboratory. Readers of this book will realize the truth of the statement that "the microscope is to the man with vision as sight would be to the man born blind."

Annual Report of Bureau of Standards; Superintendent of Documents, Washington, D.C.; 5c.

Reports work on textile-test methods, effect of weave, testing of handle and feel, accelerated ageing test for waterproofing, dope for airplane fabric, isoelectric point of silk, and manila rope.

Cotton Textile Industry of the Southern Appalachian Piedmont; By Ben F. Lemert; University of North Carolina Press, Chapel Hill, N. C.; 188 pages; $2.50.

An interesting analysis of reasons for the development of cotton manufacturing in the Piedmont section of the South, with attention to geographical and political influences, and special consideration of the various locational advantages. The book contains many charts and tables drawing comparisons between cotton textile manufacturing in New England and in the South, particularly labor, power and transportation costs. Chapters are devoted to discussion of the trend toward larger mill units and mergers in the industry, to factors influencing centralization, and to changes in types of manufacturing found in the South. After analyzing comparative manufacturing costs per yard of standard construction cloths, the author concludes that the Southern Appalachian Piedmont provides a location where, because of its climate, manufacture can continue throughout the year at the same pace; that it has a great "floating supply" of labor admirably adapted to textile manufacturing; that power and coal may be obtained in any amount; that construction costs are no higher than those in other textile regions; and that the South meets the same market conditions encountered by its competitors. While the method of handling the subject is somewhat defective in spots, the discussion of certain points being superficial and nonconclusive, the book presents many facts and figures of pertinent interest to textile manufacturing and merchandising executives. The author traveled over 3,000 miles and completed more than 75 interviews in collecting his material.

Business Literature

Steam Traps. Nason Mfg. Co., New York. Catalog describing complete line of steam traps designed for wide range of conditions.

Bearings. The Timken Roller Bearing Co., Canton, Ohio. Engineering journal, containing 258 pages of technical and engineering information, giving data on ratings, load calculations, bearing selection and descriptions of various types of bearings.

Alloy Metals. Haynes Stellite Co., Kokomo, Ind. Illustrated booklet describing properties and applications of chromium-manganese-iron alloys, cobalt-chromium-tungsten alloys, and a cast tungsten carbide, used for hard-facing metal products.

Liquid Level Gages. Foxboro (Mass.) Co. Bulletin (No. 187) describing the industrial and commercial uses and the mechanical construction of liquid level gages.

Materials Handling. Cleveland Crane & Engineering Co., Wickliffe, Ohio. Circular on Cleveland Tramrail systems for overhead moving of materials.

Cleaning Equipment. Whitin Machine Works, Whitinsville, Mass. Illustrated bulletin describing the construction and typical installations of the downstroke Buckley cleaner for cotton mills.

Steam Traps. Armstrong Machine Works, Three Rivers, Mich. Recent issue of *Armstrong Trap Magazine* containing article on installation of steam traps in plant of Vassar Swiss Underwear Co., Chicago.

BUSINESS NEWS

Texmaco is the name of a new affiliation composed of German textile machinery makers. The merger which is now under way includes the following: Saechsische Textilmaschinenfabrik vorm. Rich. Hartmann A.G., the main Hartmann works; Carl Hamel A.G., makers of ring twisting frames and other textile machinery; Saechsiche Webstuhlfabrik vorm. Louis Schoenherr A.G., makers of looms and finishing equipment; and Kettling & Braun, makers of textile machinery, especially along the finishing line. With regard to representation in this country, it has not been decided whether the *Hartmann Textile Machinery Corp.*, Kearny, N. J., will change its name to Texmaco, or whether a new American Texmaco will be organized in affiliation with that company.

General Electric Co., Schenectady, N. Y., was presented with a gold medal on Feb. 1 "for pioneering in industrial research." Presentation was by the American Institute of the City of New York, founded more than 100 years ago. The G. E. research laboratory was founded in 1900 by Dr. Willis R. Whitney, who retired from its directorship in 1931.

Onyx Oil & Chemical Co. Jersey City, recently held its annual sales meeting, a feature being the reading of articles by the company's chemists on the dyeing and finishing of acetate fabrics, the seresine fractions of silk, and recent developments in hosiery finishing.

Joseph T. Ryerson & Co., steel service, recently held its first national sales convention, a special train starting from Boston and gathering the contingents on its way to Chicago.

Diamond Chain & Mfg. Co., Indianapolis, has appointed Rodney Davis as distributor for the company's products in the Philadelphia district.

Manhattan Rubber Mfg. Div., Passaic, N. J., has announced the appointment of Charles H. Bauer as merchandise manager of the V-belt division.

St. Louis Sticker Co. has moved its offices from 1627 Washington Ave., St. Louis, to 1904 Pine St.

Union Special Machine Co., Chicago, Ill., has appointed Charles E. Stevens as the manager of the branch office in Boston, Mass., succeeding the late Joseph L. Stengel who died following an automobile accident on Dec. 29. Since 1906 Mr. Stevens has been employed by Union Special at Boston.

U. S. Gutta Percha Paint Co., Providence, R. I., has transferred L. M. Hardy to cover Virginia and the northern section of North Carolina. Mr. Hardy makes the third representative the company has in this district.

SKF Industries, Inc., has announced that the name Hess-Bright Mfg. Co. will be discontinued and that all future trading will be done under the head of the SKF company.

General Refractories Co. has elected S. M. D. Clapper president, succeeding John R. Sproul who resigned. Mr. Clapper was previously chairman of the board, which position has been vacated.

Grinnell Co., Inc., Providence, R. I., has announced the promotion of Howard P. Conway, for several years southern sales manager, with headquarters at Charlotte, N. C., to the position of general sales manager. He will be located at the main office of the company in Providence.

Westinghouse Electric & Mfg. Co. has transferred Barth M. Gatling from its Charlotte (N. C.) office to Jacksonville, Fla., but he will continue to represent the company in the eastern portion of South Carolina.

Poole Foundry & Machine Co., Baltimore, Md., has appointed Frank M. Young, Milwaukee, Wis., representative for sale of the Poole flexible coupling in Milwaukee and vicinity. The J-B Engineering Sales Co., New Haven, Conn., has received similar appointment for State of Connecticut.

Textile Chemical Products Co., Greensboro, N. C., has announced an expansion program that began on Jan. 1, with the opening of a new four story plant for the manufacture of textile soaps, oils, sizes, etc. Frank P. Morton, formerly of Charleston, S. C., recently joined the company, and will divide his time between the plant office and sales work. Alfred R. Macormac, for the last four years instructor in textile chemistry at the Clemson College (S. C.) Textile School, has been employed for technical service and experimental work in the plant laboratory. He is assisted by Harold G. McCormick. Plant production continues under the supervision of William H. McCormick, Jr.

National Association of Dealers in Used Textile Machinery and Accessories held a dinner and meeting at Providence-Biltmore Hotel, Providence, R. I., Jan. 30. The code committee reported on its preliminary hearing in Washington and by-laws for the association were adopted. John Marshall, Fall River, is president and L. F. Ott, Providence, secretary.

New eastern plant of Sonoco Products Co., Garwood, N. J., recently removed from Plainfield, N. J., as described in last issue.

Textile World Analyst

TEXTILE DEVELOPMENTS IN FIRST MONTH OF YEAR ENCOURAGING

WITH the exception of a few weak spots, the textile markets entered the new year with vigor—and seemed to have thrown off the lethargy which was descending upon them in the last weeks of 1933.

Business in January was active, prices were generally higher, and—most encouraging of all—manufacturers' organizations were watching production-demand balance most closely. The availability of group curtailment programs, under NRA, is proving one of the most constructive potentialities the trade ever enjoyed. It is, in a way, a guarantee against demoralization.

Additional statistics on 1933 textile production confirm the estimate made in these columns last month. Mill activity, based on total consumption of raw materials, was just about 25% above 1932, and approximately "normal" when compared with the 1924-1931 average—in fact it was 1½% above that average. December itself, of course, showed quite a falling off, because of the curtailment programs in effect during that month.

Manufacturing margins on carded fabrics and yarns, shown in Figs. 1 and 2, registered some rather conflicting trends in January. The average for fabrics in January was up nearly 1c. from December, while the January yarn average was fractionally down. In the last week of January, the yarn margin tooke a nose-dive in the face of a rising cotton market. However, since yarns have shown a margin out of line with cloths during recent months, this may be partly a corrective shift.

Raw wool, as shown by TEXTILE WORLD's price index numbers, moved up only one point during January, but kept intact its record of having gained in every single month since last March. At 153, the January, 1934, index is a trifle more than double the index for January, 1933, and represents the highest point reached since December, 1929. During the first half of last year raw wool gained 56 points. Since that time progress has been steady rather than spectacular, with an additional gain of 19 points being registered. Outside of cloth, the other wool indices kept pace in January.

With the exception of the sluggish colored-cloth group, all cotton indices moved upward in January. The raw cotton index (processing tax included) reached its highest point since May, 1930. Cotton yarns did not reflect the full advance in raw cotton since December, but gray cloths very nearly kept pace. The yarn and cloth indices are at their highest points since January, 1930.

The raw silk index continues to be the sulky member of the family, January, 1934, being the same as the previous month and only three points higher than January, 1933. During 1933, the low was 26, in March, and the high 50, in July. When it is considered that the 1914 base price for silk is $4.65 per lb., it seems obvious that the silk index has little chance of following the others above the par of 100.

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
July, 1931.....	15.3	May, 1933.....	15.6
October, 1931..	13.3	June, 1933.....	20.6
January, 1932..	12.1	July, 1933.....	23.4
June, 1932.....	9.5	August, 1933...	21.4
July, 1932.....	9.1	September, 1933	19.5
August, 1932...	11.1	October, 1933...	19.1
September, 1932	13.0	November, 1933	17.7
October, 1932..	12.6	December, 1933	17.6
November, 1932	10.7	January, 1934..	18.4
December, 1932	10.6	Jan. 3.....	17.6
January, 1933..	10.4	Jan. 10.....	18.3
February, 1933.	10.1	Jan. 17.....	18.7
March, 1933...	10.2	Jan. 24.....	18.9
April, 1933.....	11.4	Jan. 31.....	18.5

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
July, 1931.....	12.6	May, 1933.....	12.3
October, 1931..	12.7	June, 1933.....	15.4
January, 1932..	10.9	July, 1933.....	23.2
June, 1932.....	9.9	August, 1933...	23.5
July, 1932.....	9.6	September, 1933	21.3
August, 1932...	9.7	October, 1933...	20.0
September,1932	12.8	November, 1933	18.4
October, 1932..	12.3	December, 1933	18.5
November,1932	11.3	January, 1934..	18.3
December, 1932	10.9	Jan. 3.....	19.9
January, 1933..	10.2	Jan. 10.....	19.2
February, 1933.	9.4	Jan. 17.....	18.6
March, 1933....	9.8	Jan. 24.....	18.2
April, 1933.....	10.1	Jan. 31.....	15.6

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Textile World's Price Index Numbers

	Cotton Index Numbers				Wool Index Numbers				Silk Index
Date	Cotton	Yarns	Gray	Colored	Wool	Tops	Yarns	Cloth	Raw Silk
July 31, 1914..	100	100	100	100	100	100	100	100	100
1925.....	187	188	189	176	223	229	224	233	143
1926.....	140	155	157	149	184	189	179	207	136
1927.....	140	153	159	153	181	184	187	195	119
1928.....	160	162	162	166	199	202	199	197	110
1929.....	153	144	145	167	176	179	192	211	108
1930.....	108	125	123	144	127	139	161	202	179
1931.....	68	93	92	119	99	112	134	161	54
1932.....	51	76	73	100	78	97	115	128	34
Jan. 1933.....	50	72	67	100	76	85	105	125	29
Feb. 1933.....	48	68	65	95	75	83	102	125	26
Mar. 1933.....	49	70	66	96	75	84	102	125	26
Apr. 1933.....	56	74	72	97	78	90	104	125	29
May 1933.....	69	93	94	101	104	113	116	169	34
June 1933.....	76	109	117	112	122	139	135	192	47
July 1933.....	86	138	135	131	134	153	156	201	50
Aug. 1933.....	110	170	151	147	136	157	159	217	41
Sept. 1933	111	156	149	147	144	177	165	222	41
Oct. 1933.....	110	152	141	144	148	179	175	222	36
Nov. 1933	114	146	132	144	150	179	175	222	33
Dec. 1933	115	146	131	144	152	179	177	222	32
Jan. 1934.....	124	151	139	144	153	180	181	222	32

Note: All cotton indices since Aug. 1 include processing tax.

TEXTILE WORLD'S

Cotton Digest

LAST month we printed in these columns the trade practice provisions developed by the carded sales yarn trade and now forming a part of the cotton-textile code. This comprised ten relatively brief and simple sections. Back of this simple result, however, were weeks of hard work on the part of committees from the trade and staff representatives of the Cotton-Textile Institute.

These provisions may possibly be subject to such further revision as experience may dictate, but certainly they represent a long step forward in the fight against merchandising abuses. More than that, they typify the job which every division of every industry must do if the full possibilities of self-government are to be realized.—*Editor.*

Wide Sheeting Looms Restricted to 75% Operation

Effective for a period of twelve weeks beginning Jan. 29, 1934, a "requirement" has gone through the usual channels which restricts sheeting looms wider than 45 in. to an operating schedule not to exceed 75% of the hours otherwise permitted. The period may be shortened or hours of operation reduced at the discretion of the Code Authority, with the concurrence of the government.

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Curtailment Program for Fine-Goods Mills

Fine goods mills must shut down three full working days during each of the months of February and March, according to a decree of the Code Authority. The ruling exempts 300 looms in each mill and allows legal holidays to be considered as working days. Mills coming under the decree are those commonly known as fine-goods mills and it also applies to all fabrics made with warps finer than 32s and/or filling finer than 43s.

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Carded Yarn Spindles To Operate 60 Hours

The limit on machine operation in the carded yarn group has been placed at 60 hours per week for the four weeks started Jan. 29. From Dec. 18 until that date the industry was limited to 48 hours. The order, which was initiated by a unanimous vote of the Carded Yarn Subcommittee of the Code Authority, carries the usual provisions allowing modification and provides that weaving mills shall not jump in and produce sales yarn unless they are regularly in the business.

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Combed Yarn Curtailment Continued

Curtailment of combed yarn production, effective beginning Jan. 15, as reported in these columns last month, will continue for a period of seven weeks, or until March 3, unless the cotton textile code authority and NRA officials decide in the meantime that market conditions warrant a modification or termination of the restrictive order. Spinning spindles operating on combed yarns for sale as such, with the exception of spindles producing yarn for eventual use in the manufacture of rubber tires, are included in the curtailment program. Spindles owned by yarn mercerizers and thread producers, operating on combed yarns for subsequent processing and sale as mercerized yarn or finished sewing thread, are not permitted to run more than 75% of the maximum hours of operation which would otherwise be allowed under the cotton textile code. Other spinning spindles included in the curtailment order are limited 70% of the maximum number of hours otherwise permitted. Combed yarn mills in the Gastonia (N. C.) area, observing the 56-hour maximum week, are operating the first three days of the week on two eight-hour shifts, with one eight-hour shift the fourth day, thus remaining idle from Thursday afternoon until Monday morning.

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Statistical Chart Issued

Scheuer & Co., New York, have issued their 1933 edition of the Comparative Cotton Goods Chart. Among the items covered are the following: price of 64x60, 5.35, print cloth from 1913 to 1933, together with highest and lowest mill margins, raw cotton prices and crop movements; high and low quotations, by months, for a group of staple fabrics during the years 1931, 1932 and 1933; price data for 1926, which the national administration has set as approximate price objective.

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Converting Code Put in Effect

Supplemental Code No. 1 to the cotton-textile code, covering fair trade practices for the converting industry, was put in effect on Feb. 5. After giving the usual definition of terms, the code provides.

Trade Practice Rules—Secret payments, allowances, discounts, etc., false marking or branding, imitation of trademark or slogan, etc., prohibited. Plan of registration of print, jacquard and dobby designs may be set up. Design piracy prohibited.

Div. 1. Clothiers' Linings (not all-cotton)—Terms of sale not to exceed net 60, e.o.m. Anticipation at rate not to exceed 6%. All goods to be sold f.o.b. finisher or main office. Uniform contract to be used when approved by Code Authority. Committee may make recommendations covering cost accounting and selling below cost, other than seconds when so marked, and such recommendations when made will have same force as other provisions. No consignment selling, stock protection or price guarantee allowed. Sales offices closed Saturdays and Sundays (same for all divisions).

Div. 2. Corset, Brassiere Fabrics—Terms not to exceed 2%-10 days, 60 extra; or 3%-10 days; or 3% c.o.d. All goods f.o.b. point of origin. Provisions covering uniform contract, consignment selling, price guarantee, etc., same as Div. 1.

Div. 3. All-Cotton Linings—Terms not to exceed 2%-60 days, e.o.m.; 3%-10 days, e.o.m. Deliveries f.o.b. mill. If division so votes, price registration can be set up. Cost system, selling below cost, consignment selling, price guarantee, etc. provisions same as in Div. 1.

Div. 4. Curtain & Drapery Fabrics—Terms to manufacturers, retailers, etc., 2%-10 days, 60 extra; or 3%-10 days. Terms to jobbers, same except that June deliveries may be billed 2%-10 days, Oct. 1, and December deliveries 2%-10 days, April 1. All goods f.o.b. mill except deliveries to retailers may be f.o.b. main warehouse. No stock protection, price guarantee or allowances. No consignment selling unless division committee suspends operation of this section.

Div. 5. Shirtings—Terms 2%-10 days, 60 extra; 2½%-10 days, 30 extra; 3%-10 days or 3% c.o.d. Deliveries f.o.b. point of origin. No options. When finished goods are sold on basis of gray construction, gray width, count and weight shall be shown on invoice. Allowances, consignment selling, etc. as in Div. 1.

Div. 6. Wash Goods—Terms same as Div. 5. All goods f.o.b. point of origin except shipments to retailers or chains which may be f.o.b. plant or main warehouse. No options. Advertising allowances, consignment selling, price guarantee as in Div. 1.

Div. 7. Interlinings—Terms 2%-10 days, 60 extra, or 3%-10 days. All deliveries to be f.o.b. point of origin. No consignment selling, stock protection or price guarantee.

Administration—Administrative committee and division committees. Disputes to be arbitrated wherever possible.

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Cotton Production Control Explained by AAA

With planting time in the Cotton Belt rapidly approaching, agents of the Agricultural Adjustment Administration, aided by local committees, are presenting to the cottom farmers the 1934 production control program. Oscar John-

ston, manager of the cotton pool, in a radio address, Jan. 15, stressed three features of this plan calculated to benefit participating farmers: (1) profit to be derived from the ultimate sale of pooled cotton and cotton now held under the 10-cent loan program; (2) cash rental to be paid for acreage removed from cotton cultivation; and (3) virtual guarantee against a "disastrously low" price to the farmer cooperating in production control.

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Cotton Goods Sales Boom

Cotton goods sales during first three weeks of January exceeded production by 200,000,000 yd., or 60%, according to George A. Sloan. Unfilled orders Jan. 20 were at highest point since code became effective, amounting to 847,000,000 yd.—an increase of 175,000,000 yd. since Dec. 1. Stocks in mill hands Jan. 20 amounted to 523,000,000 yd., a decrease of 8% during the previous five weeks. Number of persons employed increased from 320,000 in March to 408,000 in June, 460,000 in August and 456,000 in October. Average wage per hour per employee increased 70% between May and October.

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Wide and Narrow Sheeting Committees

Sub-committees of the cotton textile code authority, recently announced by George A. Sloan, chairman of the cotton textile industry committee, are:

Narrow Sheetings:

S. Marshall Beattie, Greenville, S. C. (elected chairman); Robert Amory, Boston, Mass.; D. W. Anderson, Pacolet, S. C.; W. J. Vereen, Moultrie, Ga.; A. H. Bahnson, Winston-Salem, N. C.; Elroy Curtis, New York, N. Y.; Fred W. Symmes, Union, S. C.; Lanier Branson, Graniteville, S. C.; R. C. Moore, Charlotte, N. C.; James A. Chapman, Jr., Inman, S. C.; C. W. Mizell, Opp, Ala.; and Norman E. Elsas, Atlanta, Ga.

Wide Sheetings:

Charles A. Cannon, Kannapolis, N. C.; Donald Tansill, New York, N. Y.; E. T. Gurry, Aurora, Ill.; Elliott W. Springs, Lancaster, S. C.; Ernest N. Hood, Salem, Mass.; J. A. McGregor, Utica, N. Y.; Kemp P. Lewis, Durham, N. C.; Gerrish H. Milliken and George P. Ray, of New York.

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December Cotton Statistics

Statistics of particular interest to cotton manufacturers, showing December operations and the raw material situation, were:

Spindle activity	73.5% of capacity, or 5,095,047,829 spindle hours.
Cotton consumption	348,393 bales
Cotton ginned	12,558,762 bales
(Jan. 23 report)	
Cotton exports	820,000 bales

November figures for comparison follow:

Spindle activity	96.3% of capacity, or 6,796,420,109 spindle hours.
Cotton consumption	475,368 bales
Cotton ginned	12,356,769 bales
(Dec. 20 report)	
Cotton exports	915,000 bales

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Cotton Mill News

Skenandoa Cotton Co., Utica, N. Y., has filed schedules in bankruptcy, showing liabilities of $262,918 and assets of $229,138, the latter including 48,552 shares of Skenandoa Rayon Corp.

Aileen Mills, Inc., Biscoe, N. C., in receivership for over two years, have been ordered sold by the U. S. Federal Court.

Drayton Mills, Spartanburg, S. C., are arranging for early rebuilding of portion of Mill No. 2, recently damaged by fire, with loss reported to be close to $50,000, including equipment.

Clark Thread Co., Austell, Ga., has begun work on a new, one-story building, 100 x 100 ft., to be used for storage and distributing service. It is reported to cost about $50,000. General contract was recently let to A. K. Adams Co., 542 Plum St., N. W., Atlanta, Ga. J. E. Sirrine & Co., Greenville, S. C., are engineers.

Tabardrey Mfg. Co., Haw River, N. C., has foundation under way on new, one-story addition and will have unit ready at early date for installation of about 250 looms and equipment.

Marion (N. C.) Mfg. Co., during late 1933, began installation of new machinery to cost of $90,000, improved the power plant, increased wages by 10% and declared the regular 10% annual dividend.

Kilburn Mill, New Bedford, Mass., has completed the electrification of its No. 2 plant, closed three years, and will operate in conjunction with its No. 1 mill.

Alba Twine Mills, Mariposa, N. C., have installed 1,740 long draft spindles, replacing 3,360 old spindles.

Springs Cotton Mills, Springstein unit, Chester, S. C., which is being modernized throughout, will start some of its machinery the latter part of February and by the end of March all of the machinery will be in operation.

Steele's Mills, Rockingham, N. C., are constructing a number of additional dwellings for operatives.

Burlington (N. C.) **Mills** have had under construction 30 new dwellings for the operatives, ten of which were built at the Ossipee, N. C., plant.

Cabarrus Mills, Kannapolis, N. C., has erected a two story building to house surplus beams and various slasher room supplies.

Poster for National Cotton Week

Erwin Mills Co., Cooleemee, N. C., is building several new houses which will be occupied by their workers.

Efird Mfg. Co., Albemarle, N. C. will erect three new warehouses for the storage of cotton.

Wiscassett Mills Co., Albermarle, N. C., has announced plans for an addition to its Plant No. 1.

Industrial Cotton Mills, Rock Hill, S. C., is installing several new spinning frames.

Parkdale Mills, Inc., Gastonia, N. C., recently installed additional equipment, including eleven cards, two combers, two drawing frames and four winders, to balance the plant's machinery. A new lighting system has also been installed.

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Cotton Financial Notes

Naumkeag Steam Cotton Co., Salem, Mass., reports net profit of $19,067, equal to 38c. per share of common stock, for the year ended Nov. 30, 1933. The profit is the first for the company in four years, the loss of 1932 being $164,618. The mill was closed for several months last summer due to a strike.

Sagamore Mfg. Co., Fall River, earned an indicated profit of about $233,000 for the year ended Dec. 30, 1933. During the year, plant improvements costing about $215,000 were made and $15,000 paid in dividends.

Charlton Mills, Fall River, reports net profit of $67,449 for the year ended Dec. 30, 1933. Surplus is put at $274,845.

TEXTILE WORLD'S

Wool Digest

ANOTHER important branch of the wool industry went under a permanent code when the President signed the carpet and rug code effective Jan. 13. This code goes into considerably greater detail with regard to fair trade practices than do most of the textile codes, at least as originally developed. Only one of the provisions was stayed by the President pending further investigation; this was Article VII, Section 19(a) which reads: "Retail stores are to be credited or paid the volume allowance based only on merchandise invoiced to an individual company. No manufacturer shall pay or allow credit for any cost of re-shipping merchandise shipped and invoiced to a retailer."

Incidentally, the sharp increase in output reported by the woven floor coverings industry for last year has focussed favorable attention upon this particular division of wool manufacture. —*Editor.*

Besse Heads Wool Code Authority

At the first meeting of the Code Authority of the Wool Textile Industry, held Jan. 12, Arthur Besse, president of the National Association of Wool Manufacturers, was elected chairman. As previously mentioned other members of the Code Authority are H. M. Ashby, Millard D. Brown, Lewis A. Hird, Moses Pendleton, and Ames Stevens, with A. L. Green and Frederick W. Tipper alternates and H. B. Ludlum, Jr., representing the government.

Among the matters considered at the meeting were hours of operation for woolen spindles and worsted combs, which are operating under a temporary exemption. It was decided to send out a questionnaire on the subject. A number of requests for exemptions from other manufacturers were considered and rejected.

At the first meeting of the industry's promotion committee Col. C. F. H. Johnson was elected chairman.

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Fair Trade Practice Hearings Held

A number of objections to the proposed fair trade practice and merchandising rules for the piece goods selling division were voiced when hearings were held in Washington, Jan. 20. Leon Henderson, of the Consumers' Advisory Board, attacked the proposed price registration clause as leading to price fixing. The F. O. B. mills provision came under fire from David Dreschler, on behalf of the men's clothing Code Authority. This provision also was objected to by the National Association of Woolen Merchants, which represents the jobbers, and which further attacked the section dealing with discounts, taking the stand that it should set forth a definite discount for jobbers rather than merely use permissive language. The jobbers also wanted representation on the wool textile code.

On Jan. 25, Arthur Besse, president of the National Association of Wool Manufacturers, submitted a brief in reply to the various objections.

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Amendments to Wool Industry Code Approved

A series of amendments to the code of the Wool Textile Industry were approved on Jan. 24. One broadens the definition to make the code all-inclusive of the various branches. Another provides that employers may be assessed to pay the expenses of code administration, and a third limits the hours of office employees to 48 per week.

Among the amendments dealing with organization, one establishes Sub-Code Authorities to handle problems af individual sections. Details were published in TEXTILE WORLD for December, 1933.

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Wool Goods Stocks Being Liquidated

Reports from the wool goods market as to business at the close of January and early in February were conflicting and indicated considerable irregularity. On the whole women's wear mills were doing better than men's wear, largely as the result of seasonal conditions.

The present is more than usually for this time of year a period of liquidation. Retailers are selling their supplies to the consumer at prices which barely reflect half of the fabric rise from a year ago. Clothiers are sitting tight and not extending themselves. Mills are moving current stocks where feasible, and many have closed down rather than accumulate unsold goods. This period of digestion will eventually produce great vitality for the future.

Question of fall openings has been considered and laid aside as untimely in most offices. Though some had hoped for a February start, it will at least be late in the month if not in March before much can be done. Some statisticians look for a general commodity price upturn in March and perhaps that will be the cue for wool goods openings. Part-wool blankets have been opened on basis of 62½c. per lb. Basis for all-wool blankets may range from $1.20 to $1.30.

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Wool Mill Payrolls Have Declined

In a group of typical woolen mills in New England taken by the U. S. Department of Labor as the basis of a study, it is noted that employment from July to November declined 20% and payrolls over the same period declined 25%. The figures are given below. It will be seen that the change up to the end of September was gradual. After that it became magnified, and although the figures do not go beyond November, it is believed in the trade that December saw another drop in both elements.

Following figures are for identical establishments for each of the two months considered. They are from the Bureau of Labor Statistics:

Year & Month	Number of establishments	Number on Pay Roll		Per Cent Change
		1st month	2d month	
1933				
July-August..	154	46,731	49,230	+ 5.3
August-Sept..	157	50,302	47,777	— 5.0
Sept.-Oct....	153	47,231	44,828	— 5.1
Oct.-Nov.....	154	44,627	37,443	—16.1
Year & Month	Number of establishments	Amount of Pay Roll (one week)		Per Cent Change
		1st month	2d month	
July-August..	154	$814,458	$877,297	+ 7.7
August-Sept..	157	897,178	852,869	— 4.9
Sept.-Oct....	153	842,836	764,534	— 9.3
Oct.-Nov.....	154	750,006	606,910	—19.1

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Style Trends Must Figure Buyer's Purse

Because the consumer's purse is still limited and the buyer of $22.50 suits is not yet ready to jump to $35 garments, the styling problem looms large for the current and the new season. There must be sufficient novelty to attract the consumer to invest and the absence of last year's quality at the same price covered up.

In some quarters there is sensed a new turn to rough effects, a la tweeds

and cheviots. The season now closing at retail has seen distinctive things in such goods but at higher than "popular" prices. Perhaps the trend will filter down from the higher brackets where it was found not only as favoritism for rough finish but for new color shades and pattern effects. If well done on cheaper lines it may prove a great and necessary stimulus to the trade.

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Watch "Cut-Make-Trim" Clothing Methods

The men's clothing industry is endeavoring to suppress the fly-by-night "cut-make-trim" operators who buy cloth and farm it out to contractors for making up of garments. Many of these appear only at the peak of a season and have little responsibility, living by cut prices and encouraging the contractors to sweat their labor. A public hearing was held before Deputy Administrator Earl D. Howard on Jan. 3 on this subject but since it was shown that a number of long established and reputable houses operated on the "cut-make-trim" plan and that many small concerns had legitimate use for this method, it was decided to put the matter over until some form of definition or amendment could be evolved which would protect labor's interest without injuring business houses.

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Increased Activity in Argentine Wool

Notable improvement in Argentina's wool market is reported by Assistant Trade Commissioner Jule B. Smith, Buenos Aires. Activity in the finer grades has almost assumed the character of a boom. One lot of fine crossbred wool brought the highest price obtained during the last five years. November saw a general rise of 25 to 30%.

Exports of wool from Argentina during the ten months ending October, 1933, totaled 124,807 metric tons valued at 28,786,522 gold pesos compared with 103,129 tons valued at 26,213,874 pesos in the corresponding period of 1932. Germany and the United States were principal buyers in 1933.

•

Activity of Industry

Current statistics on wool consumption and mill activity follow, the activity percentage being based on single 40 hour shift, 5½ days per week:

	November	December
Wool consumed:		
Total clean equivalent (excluding carpet)	15,855,000	12,276,000
Carpet wool (grease)	7,679,000	6,045,000
Activity, machinery		
Looms (50" and wider)	82.0%	74.2%
Carpet looms	59.6%	46.4%
Combs	123.1%	97.7%
Worsted spindles	74.1%	58.8%
Woolen spindles	81.1%	71.8%

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Wool Quiet After Close of Big Year

Wools had a tremendous turnover in 1933 on a constantly rising price scale. Five years of receding prices came to a definite end early in 1933. Although wool has registered a very substantial recovery from the lows of 1933, prices still have a long way to go before touching some of the records of the past.

Comparing December, 1933, average prices of territory and fleece groups with the previous January shows a gain of 98% by territory and 100% by fleece wool. Wools moved through mill machinery in large volume and prices advanced steadily upward almost without recession until at the beginning of this year they were strong at their peak for the movement. Average quarterly prices of the territory group are shown herewith:

1933, 1st quarter... 38.9c. clean basis
1933, 2nd quarter... 53.0c. clean basis
1933, 3rd quarter... 72.3c. clean basis
1933, 4th quarter... 77.4c. clean basis

In some quarters it is doubted whether another record consumption at the higher prices can be made in 1934. Reconstruction rather than a return to the old order is apparently the objective of the Administration and this is being reflected through all divisions of wool manufacturing back to the raw material. Volume buying in the raw material is now apparently awaiting favorable development in the goods market where higher-priced and better-quality fabrics are checked in their movement into use by the fact that unemployment in the white collar class is still a factor.

•

Tops Recede After Advance

High for the month in wool tops was touched soon after the middle of January when the October contract touched 111.1c., after that there ensued a decline which took prices back close to the levels at which the month began, 3 to 5c. under the peak. Boston spots were at 112.5 on Jan. 26, a rise of 1c. from Jan. 12, but demand was light. Foreign top markets were irregular.

Wool Mill News

Uxbridge Worsted Co., Uxbridge, Mass., has started operations in the former mill of **Andrews Mill Co.**, Andrews Village, R. I., recently purchased. An improvement program has been carried out and plant made ready for maximum service, with about 175 looms available.

Livingston Worsted Mills, Washington, R. I., will be closed about April 1, when machinery will be removed to the **Germania Mills**, Holyoke, Mass., and the two concerns consolidated.

Felt & Textiles, Ltd., Sydney, Australia, has negotiations under way for purchase of tract of land in the vicinity of Montreal, Que., to be used as site for a new Canadian mill. Initial mill units with power house are estimated to cost over $250,000, with equipment.

Appleton (Ontario) **Woolen Mills** has been restarted by D. W. F. Caldwell on blankets and hosiery.

Athens (Ontario) **Woolen Mills** were completely destroyed by fire a few weeks ago, due it is thought, to a nail in the picking machine. David Miller and D. McEvoy, formerly of Ottawa, operated the mill.

A. R. Burrows Textiles, Ltd., Toronto, Ont., has been incorporated to manufacture textile fibers. Charles MacKenzie is president.

Enduro Rug Co., Brantford, Ont., has resumed operations following partial destruction of its plant recently by fire.

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Wool Financial Notes

Hamilton Woolen Co., Southbridge, Mass., reports net profit of $283,104 for the year ended Nov. 30, 1933, equal to $9.17 per share of common stock. All but $67,119 of the earnings were paid out in dividends. Inventory increased nearly 300% during the year and stood at $1,616,742 on Nov. 30. In 1932 the profit was $39,617.

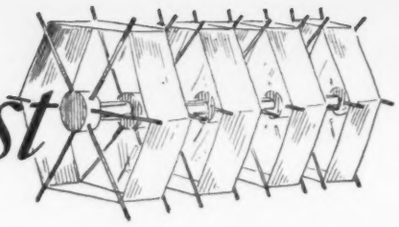
Sanford Mills' (Me.) balance sheet for the year ended Nov. 30, 1933 indicates earnings of $702,594, equal to $2.92 per share, as compared with an indicated loss of $757,000 the previous year.

Bigelow-Sanford Carpet Co., voted the regular dividend of $1.50 on the preferred stock at the annual meeting and a special dividend of $1 per share on the common. Net earnings for 1933 were estimated at $1,100,000, as compared with a net loss of $1,948,737 for 1932.

Berkshire Woolen Co., Pittsfield, Mass., voted dividends totalling 16% for the year 1933.

TEXTILE WORLD'S

Silk Digest



THE Federated Textile Industries, Inc. (Silk Association to you!) holds its first annual dinner under that name on Feb. 13. That is, we presumed it would be under that name but as we write this a company with a similar title has brought court action to restrain the use of the new associational monicker. . . . See below for details. We'll refrain from "I told you so's."

However, under whatever name it travels, we extend to the organization our felicitations and best wishes. It has a difficult job ahead—but the sort of job which, through the very effort it calls forth, should strengthen the association and its members.—*Editor.*

No Further Fabric Curtailment Sought

Indications that the broadsilk stock situation is now considerably improved, were seen in the decision, Jan. 17, of the Silk Code Authority to seek no further curtailment of production for the present. The Authority made known its stand, in denying that an application for curtailment had been filed with Administrator Hugh S. Johnson. In clarifying wage differentials, the Authority ruled these differentials must be based on standard silk mill operations of winding, quilling, warping, weaving and loom fixing and not on any minor operation.

It is understood that certain silk firms have refused to give statistical information requested by the Authority; the Authority pointed out that such refusal is a direct violation of the code.

•

"Pure Dye" Term Stirs Criticism

Use of the term "pure dye" as designating pure silk fabrics was under fire from various quarters in the industry during January, and there were strong indications that the protests would soon crystallize in remedial action. Phillip A. Vogelman, president of Onondaga Silk Co. urged, Jan. 17, that the term "pure silk" be substituted for "pure dye" to eliminate confusion and misunderstanding which he said is prevalent in the dress trade and consumer fields. Broadsilk houses specializing in synthetic yarn fabrics also criticized the current use of the term "pure dye," one factor asserting that many silk firms apply this characterization to silk fabrics which are treated with metallic substances to make their weight equivalent to that of raw silk before the gum content is removed.

In a recent statement, Paolino Gerli, president of the International Silk Guild intimated that the Guild might start a campaign to substitute the term "pure silk" for "pure dye."

It is asserted in the trade that, while originally "pure dye" meant a silk fabric which had not been treated with metallics or other foreign substance, the growing trend toward silk and synthetic mixtures makes the present use of the term, if not inaccurate, at least misleading.

•

Raw Silk Spurt Brings 20c Rise

After several lean months the raw silk market showed signs of recuperation in January, and a spurt of buying developed which sent prices up about 20c. over December levels. During the two middle weeks of the month demand from broadsilk mills was especially active, and the average order was larger. Substantial business for March and April was placed, with volume for the four-week period promising to exceed that of any month in the last quarter of 1933. The pick-up was attributed first, to a feeling that silk prices are at bargain levels, and second to the need for silk for the spring lines.

Importers looked for maintained strength through the early part of February, with the possibility of a further moderate advance, if buying continued as at present. Hosiery mills placed practically no business, due to the curtailment of production, but the conclusion of the curtailment period brought some preliminary inquiries.

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Fabric Sales Show 35% Rise

January broadsilk sales picked up decisively after the holidays and at the end of the third week it was estimated that volume for the month would be 35 to 40% above the same period last year. The much-heralded print vogue was late in developing, though various medium-sized floral designs were in active call. Plain canton crepes, novelty fabrics, and the higher-priced sheers, were the most popular lines, however, with color interest centering on navy, black and brown for daytime dresses, and pastels for evening. Indications were that the big print call would not show itself before the end of the current month, at which time dress manufacturers will have completed plans for their new lines.

Prices were moderately steady with the exception of cantons and higher-priced mossy crepes of which considerable distress stock was being offered at bargain levels. Generally speaking, the stock situation was fair.

•

Federation Sued

Charging that the name Federated Textile Industries, Inc., adopted by the federation succeeding the Silk Association of America, is so similar to its own as to cause confusion and risk of injury, Federated Textiles, Inc., a company of selling agents for several mills, brought suit Jan. 17 against the federation. The selling agents' firm applied to U. S. District Court, New York, for an injunction to restrain the Federated Textile Industries, Inc., from continuing to use its present corporate name.

Officers of the Federated Textile Industries, Inc. later indicated that the name of the organization would be changed to eliminate the objectionable features. Incidentally the Federation has opened a branch office in Paterson, N. J.

•

Protest Weekly Reports

Contending that it is impracticable to furnish weekly statistics, as requested by the Silk Code Authority, the Textile Converters' Association of America, at a meeting in New York, last month, decided to ask the Code Authority to permit monthly reports instead. The rules of the Code Authority require the submission of figures on greige and finished goods receipts, sales and stocks, and it was the sense of the converters' meeting that it would be practically impossible to supply the voluminous data needed on a weekly basis.

•

Federation Holds First Dinner

All divisions of the silk industry and various related industries were represented in substantial number at the first annual dinner of The Federated Textile Industries, Inc., which was held Feb. 13 at the Waldorf-Astoria Hotel, New York. Unusual significance attended the event, since it afforded the importing, yarn, broadsilk and other groups the first opportunity they have had to get together since the Silk Association of America made way for the new federation.

The dinner was arranged by the fol-

lowing committee of which Henry E. Stehli, Stehli Silks Corp., was chairman; Louis F. Auger, National Silk Dyeing Co.; James A. Goldsmith, Jr., Hess Goldsmith & Co., Inc.; Takeo Ito, Mitsui & Co., Ltd.; John P. Maguire, Textile Banking Co., Inc.; William Menke, Menke, Kaufmann & Co., Inc.; Harold Rubin, American Silk Mills and Henry Schniewind, 3rd, Susquehanna Silk Mills.

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Velvet Code Authority Named

Plans for completion of machinery to administer the velvet code progressed rapidly during the month. Velvet manufacturers held a meeting Jan. 19 at the New York Offices of the Federated Textiles Industries, Inc., and elected five members to serve on the Velvet Code Authority, as follows: Frank R. Wheeler, of the Rossie Velvet Co., Ward Cheney, president of Cheney Bros., Herbert H. Schell, vice-president of Sidney Blumenthal & Co., R. E. Knup of J. B. Martin Co. and John M. Balsam. Godfrey Bloch was previously appointed NRA representative on the authority.

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Guild Selects Trade-Mark

Plans of the International Silk Guild for its promotional campaign crystallized rapidly during the month, the most important step being the designation of an emblem to identify both weighted and unweighted silks. This emblem will be printed in letters of gold on a white background and will constitute the Guild's trade-mark. For weighted silk, the phrase "pure silk weighted" and for non-weighted the phrase "all pure silk" will be used.

It was also announced that the Guild would give full support to the movement for accurate identification of all fabrics as to content. Plans for the Guild, and the silk industry's outlook generally were the theme of an address by Paolino Gerli, president of the Guild, Jan. 18, before the National Retail Dry Goods Association, in New York. Predicting an early upswing to silk, Mr. Gerli said this would be due to five chief causes as follows: Economic improvement, consumer desire for change, intrinsic merit, more accurate identification of fabric as to content and the International Silk Federation's promotional work. He added that a campaign to popularize the Guild trade-mark from coast to coast was projected.

•

Reforms for Japan

Eight key reforms looking to improvement of the Japanese silk market were approved at a special meeting of the All-Japan Federation of Raw Silk Associations, held recently in Yokohama. The points are: Improved management and modernization of silk reeling mills; lower freight rates on silk cocoons, raw silk and coal; lower commission on silk sales; establishment of a cooperative raw silk distributing company; abolition of silk examination fees; lower storage rates; lower silk production costs through adoption of intensive silk raising methods; and, finally, increased domestic use of silk by means of the following program: abolition of silk consumption tax; adoption of system of marking part-silk goods with silk percentage to protect all-silk products; and enactment of a law providing that all formal uniforms of the Government be made of silk.

•

Japan Orders 30% Curtailment

Prospects for improvement in the raw silk market increased considerably with the news that the Japanese Government had decided to order a 30% reduction in silk exports, effective Feb. 1, and continuing until the end of September. This information was made public Jan. 19 by H. Shiga, of the Raw Silk Intelligence Office of the Japanese Government, New York. It is understood that reeling will be curtailed in proportion. Mr. Shiga also said that official figures placed the total 1933 cocoon production at 10,247,031 kwan (16 kwan equals about 132 lb.)

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Imports Decline 8%

Raw silk imports during 1933 totaled 503,376 bales, or 43,819 bales less than last year, a decrease of 8%, the Federated Textile Industries, Inc., reports. Silk in storage in warehouses was 96,786 bales on Jan. 1, 1934, or 33,949 bales above Jan. 1, 1933. Deliveries to American mills during December were 26,959 bales, or 13,589 under the same month of 1932.

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Kramer Notes Pick-up

Broadsilk orders written by his company during the first ten days of this year were the largest since last June, it was stated Jan. 11, by Raymond C. Kramer, president of Belding-Heminway-Corticelli Co., who said this improvement was noticeable both in the retail and cutting-up divisions. Mr. Kramer said orders were "literally pouring in."

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Italy's Output Falls 10%

Notwithstanding financial aid given by the Government, Italy's silk output in 1933 was 10% below 1932, according to Consul Homer Brett, Milan, in a report made public by the Commerce Department. Consul Brett states that except for the government subsidy, silk growing would have almost entirely disappeared from Italy during the last three years.

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Museum Gets Historic Velvets

The current fashion importance of velvets lends interest to the announcement that a distinctive collection of fifteenth and sixteenth century velvets is included in a gift of rare textiles made to the Metropolitan Museum of Art, New York, by Mrs. Valentine A. Blacque. The most interesting are six plain-colored velvets with voided patterns believed to have been made on Italian and Spanish looms of the late fifteenth and early sixteenth century.

•

Silk Mill News

Julius Kayser & Co., reports a net profit of $139,226 for the second half of 1933 against a net of $157,071 for the same period in 1932. For the final quarter of 1933, the income was $34,709 against $181,127 in the previous year.

Henry Doherty Silk Co., Clifton, N. J. will be sold at public auction on March 2, according to an order signed by the Federal Court.

Atlas Silk Mills of Virginia, Inc., Martinsville, Va., an interest of the **Atlas Mills**, New York, operating at the former plant of the **Martinsville Silk Co.,** plan early call for bids on general contract for a new one-story addition, reported to cost close to $40,000, with equipment.

Iredell Mills, formerly the **Cascade Mills,** Mooresville, N. C., have purchased 200 of the latest model silk looms to replace old looms. Roy K. McNeely of Mooresville, and C. E. Folk of Statesville, N. C., are temporarily in charge of the mills. It is probable that the looms of the **Duchess Fabrics Corp.,** Statesville, will be moved to Mooresville.

Onondaga Silk Co., Ogdensburg, N. Y., has completed removal of equipment to Easton, Pa., where consolidation with the main plant has been made.

TEXTILE WORLD'S

Rayon Digest

THE job done by the *Textile Organon*, of the Tubize Chatillon Corp., on the 1933 annual statistics of the rayon industry deserves unstinted praise. So does the cooperative instinct of the industry as a whole which made this job possible.

The record domestic output of 207,578,000 lb. last year should jolt some of the irreconcilables who are still predicting the collapse of the "rayon bubble." Since we predicted a production of 208,000,000 lb. in these columns last September, we didn't get a shock—except possibly one of surprise at our own accuracy.

And we still insist that the synthetic fiber industry has barely started!—*Editor.*

Yarn Sales Show Quick Pick-Up

Yarn sales showed a prompt pick-up after the holidays and the end of January found producers with a substantial quantity of spring business on their books. The tendency has been somewhat away from futures, due to the fact that weavers need yarn immediately for manufacture of spring and early summer fabrics. Producers asserted that mills were pressing them for deliveries.

Improvement in the fabric outlook has stimulated the call for yarns. Rayon weavers reported a good response by dress houses to their early showings, especially in the higher priced sand crepes, moss crepes, and, to a lesser degree the cantons. New types of mossy crepes are being well received. Rayon broadgoods prices have held steady since the end of the year, thanks largely to spring season impetus, and prospects point to continued strength.

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Rayon a Highlight at Retail Convention

Rayon was studied from the points of view of technical development, sales, and fashion, at the annual convention of the National Retail Dry Goods Association held last month in New York. The relation of technical development to retail demand for synthetic yarn piece goods, was described Jan. 18, by Alexis Sommaripa, fabric development and research manager of the DuPont Rayon Co. Perfection of super-filament dull yarns means that dull rayon fabrics will be outstandingly important in sales this spring, he stated; however, he believed the greatest volume would go to the new dull radium prints. Mr. Sommaripa paid tribute to the Quality Control Plan of the Viscose Co., which he emphasized as helping the rayon industry generally. Fabrics with Celanese yarn content fall in four classes, it was stated by Robert G. Dort, of the Celanese Corp. of America, another speaker; he defined the classes as follows: The 100 per cent. Celanese, the Celanese-and-silk, the Celanese-and-rayon, and the Celanese mixed with other fibers including cotton. He said printed mossy crepes for sportswear would be a notable spring line.

Synthetic yarn fabrics contributed by the DuPont Rayon Co., the American Bemberg Co., and Adamson Bros., sponsors of Lastex, were shown at a fashion show which was held in conjunction with the retailers' convention, Jan. 17. The retailers also studied the growing trend toward home sewing as evident in increased piece goods sales.

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Ribbed Effects Lead in Acetate Fabrics

Ribbed effects will be emphasized to an unusual degree in the leading spring acetate fabrics, according to a fashion bulletin issued in late January by the Acele department of the DuPont Rayon Co. Failles are important both in wide-ribbed and narrow-ribbed constructions. Weavers have achieved some striking new ribbed effects with the use of diagonal and crinkly designs. Other fashion trends in fabrics of acetete yarn are novelty mossy crepes, crepe-back satins, frosted velvets and knitted fabrics. An interesting feature is the tendency to revive clokys and matelasses, this being limited to the higher-priced lines.

•

1933 Yarn Output Shows 54% Increase

The steady growth of the rayon industry through 1933 is shown in figures made public Jan. 18 in the *Textile Organon* published by the Tubize Chatillon Corp. The statistics are 100 per cent. representative of all processes, excepting acetate where the representation is only 30 per cent. The data discloses that production in 1933 was 54 per cent. above 1932, totalling 207,578,000 lb., an all-time record, against 134,814,000 lb. in 1932; this rise is especially significant in that throughout the year consumption kept pace with production. The 1933 figure is 45 per cent above 1931.

Year-end carryover, while slightly above that of Dec. 31, 1932, represented only three-weeks supply. Stanley Hunt, editor of *Textile Organon*, interprets the figures as indicating "a most healthy state of balance." Other points stressed by the editor on basis of data are: Acetate production has led all divisions in rate of growth; there has been a "tremendous" turn toward weaving yarns as contrasted with knitting yarns, and a notable drop in viscose yarn consumption by hosiery industry. One-quarter of viscose production was fine denier yarns while in other processes the average was nearly two-thirds fine denier; for the entire industry, one-third output was fine and two-thirds coarser denier.

Commenting upon the reduced viscose rayon consumption by the hosiery industry, Mr. Hunt points out that this issue was raised at the compensatory tax hearings in Washington; he adds: "It will indeed be difficult for the government or the mercerized cotton industry to show any shift from mercerized cotton to rayon in the hosiery industry on the basis of this data."

•

Industrial Reports $1,806,791 Net

Optimism was the keynote of the annual report of the Industrial Rayon Corp., which was submitted to stockholders Jan. 17, by Hiram S. Rivitz, president. The report shows decided improvement in net earnings. The company's profits for 1933 totalled $1,806,791 against $237,251 in 1932. This equals $9.03 per share on 200,000 shares as contrasted with $1.64 per share on 144,299 shares in the preceding year.

Highlights of Mr. Rivitz' statement accompanying the report were: Company is booked up for the first quarter of 1934; all plants operating at capacity; very low carryover at end of 1933. The report showed a highly liquid condition, the ratio of assets to current liabilities being 9.2 to 1. Quick assets totalled $9,731,563 against current indebtedness of $1,048,241.

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Debate Effect of Silk Campaign

Rayon merchandisers are closely watching the projected silk campaign of the International Silk Guild for its possible effect on the synthetic yarn industry. While refusing to say whether a reciprocal drive might be undertaken by their own group, the rayon sales-managers said they regarded the move of the raw silk industry as potentially quite important.

Part of the rayon industry is disposed to view the silk campaign lightly, but this is far from a general opinion. The trade leans more to the view ex-

pressed recently in *Textile Organon*, published by the Tubize Chatillon Corp. This publication commented in estimating rayon's outlook, that notice must be taken of "the relatively unfavorable influence which the silk campaign may have on rayon." Low price of silk also is stressed as adding weight to the silk promotion effort.

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Exports Show Decline

Rayon merchandise exports during November 1933 were below the average for that year, according to reports of the Bureau of Foreign and Domestic Commerce of the U. S. Department of Commerce. The exports for November totalled $171,624 against an aggregate for the eleven months of $2,287,312. Yarn exports in November totalled 87,545 lb., value $53,224, bringing the total for the eleven months to 993,753 lb. invoiced at $497,725. Imports of rayon waste were closer to normal, reaching 266,513 lb., value $50,539 in November.

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Germany Promotes Spun Rayon

With spun rayon promising to be an important domestic line during the year just opened, producers were watching with interest the spun rayon promotion campaign inaugurated throughout Germany by the I.G. Farbenindustrie A.G. Leading German retail stores are cooperating in the drive which aims to promote the sale of Vistra spun rayon products. Widespread distribution of Vistra placards and other publicity material is a feature of the campaign, as are fashion shows, customer service and a special fashion paper issued by the rayon company. Boucles, crepes, taffetas, spun rayon and wool mixtures are among the fabrics highlighted. The New York spun rayon market regarded the German campaign as valuable in offering merchandising cues for 1934 promotion here. American demand for spun rayon fabrics grew rapidly last year and is expected to increase further during the coming season.

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DuPont Fabrics Accent Construction

The unusual importance of weave and texture in spring fabrics is illustrated in a swatch book of new constructions made from DuPont rayon, which was issued to the trade by the style service department of the DuPont Rayon Co. The book contains nearly 30 swatches including knit fancies, ribbed novelties, specialty weaves, mossy crepes, a notable range of floral and dot prints, and tailored and sport crepes. A brick-colored check on a raised white surface is one of the ribbed fabrics and printed shirtings are distinctive among the knit group.

Quilted effects in rayon velvets, so developed as to eliminate rigidity and give the impression of ribs, are a notable feature of the new Paris showings, according to reports received by the style service of the Du Pont Rayon Co. The velvets are used both in hats and dresses.

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Show Will Combine Plastics and Synthetics

"Fashions and Interior Decorations Developed in Man-Made Materials" is the theme of an exhibition to be held beginning March 15, at the Radio City exhibtions rooms of the Fashion Group in New York. The show will comprise two main groups: Furniture and decorative accessories including equipment for the entire house contributed by manufacturers of plastics; and drapery and upholstery fabrics and other household textiles contributed by manufacturers of synthetic textiles. The exhibit will continue until April 14. Its purpose is to aid in consumer education and quality and signficance of synthetic products. The show was first mentioned in these columns in December, 1933, issue, page 99.

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Bemberg's Novel Chart

The story of the manufacture of cuprammonium yarn is told with dramatic effectiveness in an educational chart just issued by the educational service bureau, American Bemberg Corp. The face side of the chart carries a display of current Bemberg fabrics together with a sample of yarn; on the back of the chart is a diagram showing the stretch-spinning process used in making Bemberg yarn.

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Rayon Mill News

Cascade Rayon Mills, Inc., Mooresville, N. C., has been organized by J. Spencer Love, Burlington, N. C., and associates, to operate a local plant. New company is capitalized at $100,000.

Beaunit Weaving Mills, Inc., Cohoes, N. Y., has been incorporated with a capital stock of $350,000 for the manufacture of rayon products. Equipment is now being installed.

Du Pont Rayon Co., Old Hickory, Tenn., about March 15, expects to begin the construction of 200 new homes for operatives.

Celanese Corp. of America, Inc., Amcelle, Md., has awarded contract for structural steel framing for new addition to Mill No. 3, to the McClintic-Marshall Corp., totaling about 1400 tons. Entire expansion program at mill, with installation of new equipment, is reported to cost close to $500,000.

Table Showing Yards per Hour per Loom Woven at 75% Efficiency

(25% of time allowed for loom stoppage)

Revolutions (picks) per minute

	110	120	130	132	136	140	144	148	152
Pick-wheel	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.
40	3.44	3.75	4.06	4.13	4.25	4.38	4.50	4.63	4.75
44	3.13	3.41	3.69	3.75	3.86	3.98	4.09	4.20	4.32
48	2.86	3.13	3.39	3.44	3.54	3.65	3.75	3.85	3.96
52	2.64	2.89	3.13	3.17	3.27	3.37	3.46	3.56	3.65
56	2.46	2.68	2.90	2.95	3.04	3.13	3.21	3.30	3.39
60	2.29	2.50	2.71	2.75	2.83	2.92	3.00	3.08	3.17
64	2.15	2.34	2.54	2.58	2.66	2.73	2.81	2.89	2.97
68	2.02	2.21	2.39	2.43	2.50	2.57	2.65	2.73	2.79
72	1.91	2.08	2.26	2.29	2.36	2.43	2.50	2.57	2.64
76	1.81	1.97	2.14	2.17	2.23	2.30	2.37	2.43	2.50
80	1.72	1.88	2.03	2.06	2.13	2.19	2.25	2.31	2.37
84	1.64	1.79	1.93	1.96	2.02	2.08	2.14	2.20	2.26
88	1.56	1.70	1.85	1.88	1.93	1.99	2.05	2.10	2.16
92	1.49	1.63	1.77	1.79	1.85	1.90	1.96	2.01	2.07
96	1.43	1.56	1.69	1.72	1.77	1.82	1.88	1.93	1.98
100	1.38	1.50	1.63	1.65	1.70	1.75	1.80	1.85	1.90
104	1.32	1.44	1.56	1.59	1.63	1.68	1.73	1.78	1.83
108	1.27	1.39	1.51	1.53	1.57	1.62	1.67	1.71	1.76
112	1.23	1.34	1.45	1.47	1.52	1.56	1.61	1.65	1.70
116	1.19	1.29	1.40	1.42	1.47	1.51	1.55	1.60	1.64
120	1.15	1.25	1.35	1.38	1.42	1.46	1.50	1.54	1.58

EXAMPLE: To determine the production of one loom running at a speed of 144 picks per minute on a 76 pickwheel crepe fabric 2 shifts of 40 hours per week each = 80 × 2.37 yds. = 189.6 yds.

Note: If the efficiency is above or below 75% add or subtract accordingly.

The above table was inspired as an aid in calculating production under the National Recovery Act. It was prepared by the Textile Testing and Research Laboratories, New York.

TEXTILE WORLD'S

Knit Goods Digest

THE prestige of the Hosiery Code Authority has been enhanced—and deservedly so—by the manner in which it has done its extremely difficult production-curtailment job. The Authority was neither too severe nor too lenient in its execution of that job. Furthermore, it has shown mental flexibility in its readiness to change past methods in the development of a permanent technique. In other words, it is firm but not hard-headed.

Comments we have heard indicate that these virtues have been appreciated by the industry at large.—*Editor.*

Hosiery Production Now Normal

With the conclusion of the five-week curtailment of hosiery production instituted by the Hosiery Code Authority in December, mills resumed normal operating schedules on Jan. 22. While it is still too early to appraise the fundamental effect of the drastic 40% reduction order, industry leaders were agreed at the start of the current month that it had materially improved prospects for price stability. Especial praise was voiced for the dispatch and decisiveness of the Authority's administration on this issue, and it was felt generally that the end of the curtailment period found the Authority's prestige much enhanced in the hosiery industry.

The Authority reviewed the results of the curtailment at a meeting in New York Jan. 18. In deciding against any extension of the reduced schedule, eight points were cited, as follows: Prevailing low shipments from mills; sharp reduction of mill stocks; expectancy of seasonal pick-up in demand; further drop in stocks would hinder normal deliveries; continued curtailment might injure consumer interests; curtailment was generally and uniformly observed; present demand requires increased number of operating hours; curtailment maintained without increasing prices.

The Authority concluded its announcement with praise for the cooperative spirit shown by the industry in obeying the order. Earl Constantine, managing director of the National Association of Hosiery Manufacturers stated Jan. 19 that a plan for permanent control of production was being developed.

•

Underwear Fabric Prices Up 3c.

Rayon underwear prices reacted upward to the news that two rayon producers manufacturing a substantial portion of the underwear industry's tubular knit fabric, had raised fabric prices 3c. Tubize Chatillon Corp. advanced prices Jan. 19, and the Industrial Rayon Corp. followed suit on Jan. 21. The increase affects fabrics made of 150 denier yarn and applies to orders taken for March delivery; it reflects the recent increase in 150-denier coned yarn.

Underwear users are being helped by a system of testing and checking Chardonize undergarments, operated by Good Housekeeping Institute, it was stated by Leonard Smith, advertising manager for Tubize Chatillon Corp. He said the test procedure includes wear and laundering as well as physical attributes of the textile.

•

Underwear Code Changes

At the end of a hearing held at Washington, Jan. 19, Deputy Administrator Ludlum, announced that the following changes in the underwear industry code, requested by the Underwear Institute, had been taken under advisement: Addition of Kentucky to Southern States, acceptance of a certification plan for installing additional productive machinery, and a system for pro-rating the cost of code administration.

•

Hosiery Accord Helps Outlook

Labor outlook in the hosiery mill district of Pennsylvania improved materially last month following mutual acceptance of an agreement by the Berks County Division of the American Federation of Full-Fashioned Hosiery Workers, and Berks County hosiery manufacturers. The agreement represents a compromise, being similar in numerous aspects to that agreed upon in the Rosedale Knitting Mills controversy.

Final steps to settle the Rosedale dispute were taken at Reading, Pa., Jan. 12, when William C. Bitting, president of the company, met union representatives in conference. It was decided that the strike be called off immediately. Chief points in the accord are: Agree to NRA code operation; wage scale will conform to Full-Fashioned Hosiery Association rates, guaranteed until June 1, 1934; collection of union dues at mills prohibited; collective bargaining provided for; disputes shall be settled by Prof. George W. Taylor, as arbitrator; no strikes, lockouts, picketing, etc. for period of agreement; agreement shall continue until June 1, 1934, with automatic renewal for 90 days unless either party gives 30 days notice of desire to terminate it.

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Spring Underwear Response Good

First reports from underwear salesmen who took the road in mid-January with spring lines showed a trend toward early commitments by both wholesalers and retail trade. Preliminary orders were largely for two-piece suits, though the lightweight union type also enjoyed some favor. Market observers did not expect spring volume to reach any appreciable figures until the latter part of February. Response to the spring prices was good, which strength the mills credited to the fact that a fair degree of uniformity was maintained by leading companies on quotations.

Heavyweights have reached the end of their season, and sales figures showed volume to be well ahead of 1932; prices, however, were unsatisfactory in many instances, and profit on ribbed merchandise has been only meager. The most encouraging factor of the heavyweight season is that mills have been almost completely cleaned out, as is true also of the leading distributor outlets, and the prospects for the 1934 ribbed season are regarded as unusually promising because of that factor.

•

Outerwear Ass'n Holds 16th Convention

Merchandising, production and other problems were considered in their relation to operation under NRA at the sixteenth annual convention of the National Knitted Outerwear Association, held Feb. 13-14 at the Grand Central Palace, New York. The convention, which was arranged in conjunction with the Knitwear Industrial Exposition, was held in the form of a hearing by the Knitted Outerwear Code Authority.

The annual dinner of the association was held Wednesday evening, Feb. 14, at the Hotel Astor, New York. The event attracted an unusually large number of knitwear manufacturers who also attended the machinery show.

•

Huffman Elected to Head Hosiery Association

Robert O. Huffman, of Morganton, N. C., was elected president of the Southern Hosiery Manufacturers Association, at the organization meeting held in Asheville, Jan. 27. Other officers elected by the new association were: J. M. Berry, Rome, Ga., vice-president,

and chairman of the seamless hose division; T. J. Wallner, Pulaski, Va., vice-president, and chairman of the full-fashioned hose division; A. Straus, Jr., Columbus, Ga., treasurer; and, as announced in last month's issue, T. R. Durham will act as executive secretary, with headquarters in Charlotte, N. C. The following board of directors was named.

C. W. Gaddy, Albemarle, N. C.; J. H. McEwen, Burlington, N. C.; F. S. Wilcox, Union, S. C.; Henry T. Bryan, Jr., Chattanooga, Tenn.; Harold Lamb, Knoxville, Tenn.; John K. Voehringer, Greensboro, N. C.; Clarence G. Burton, Lynchburg, Va.; W. W. Lancaster, Spartanburg, S. C.; G. G. Harralson, Princeton, Ky.; Robert E. Davis, Fort Payne, Ala.; R. T. Amos, High Point, N. C.; Garnett Andrews, Rossville, Ga.; W. H. McLellan, New Orleans, La.; and P. W. Eshelman, North Wilkesboro, N. C.

•

Raw Silk Exhibit for Knitting Arts Show

Plans for the Knitting Arts Exhibition, to be held April 23-27 at the Commercial Museum, Philadelphia, under auspices of the National Association of Hosiery Manufacturers, are rapidly taking concrete form. One of the features will be an exhibit for the testing of raw silk. The display which is being arranged by the Raw Silk Committee of the association, will include machinery and other equipment used in silk-testing, and also equipment used for the grading of silk hosiery. Trained operators will show machines in action.

•

Southern Hosiery Men Meet

Major problems facing the southern hosiery industry were considered at a general meeting of the Southern Hosiery Manufacturers Association, which was held Jan. 27, at the George Vanderbilt Hotel, Asheville, N. C. Approximately 300 manufacturers attended. The association was formed two months ago.

•

To Standardize Hosiery

Plans for the development of standard constructions of hosiery are now being worked out by the National Association of Hosiery Manufacturers, it was stated Jan. 17, by Earl Constantine, managing director of the association. Mr. Constantine added that the standards when ready would probably be incorporated in the hosiery code and thus become law for the industry.

•

Outerwear Inter-Union Fight Court Issue

The inter-union controversy which has disturbed knitted outerwear manufacture in New York for some months, had its first court test in mid-January when the Westbury Sportwear Co., of Brooklyn, asked the Kings County Supreme Court to restrain the International Garment Workers Union from interfering with its labor contract with the United Textile Workers of America.

Decision was reserved. The trade hopes for an early settlement; the case is regarded as very important to outerwear mills in the New York districts, where the conflict between the unions has interfered with production since fall.

•

National Board Sifts Cleveland Dispute

The dispute between four leading outerwear mills of Cleveland, the Cleveland Regional Board and the United Textile Workers of America, over the formation of company unions in the mills, was aired Jan. 17 at a hearing before the National Labor Board in Washington. Subsequent to extensive testimony by spokesmen for the mills and for the United Textile Workers, which organization had complained against the mills, the National Board ruled that charges of coercion made by the union were unfounded, and recommended that the Cleveland Board cancel its order calling for new elections in mills.

•

Chicago Yarn Men Elect Officers

The Chicago Yarn Men's Circle, which annually entertains executives of hosiery and underwear mills in a golf tournament, is entering the thirteenth year of its existence and has elected the following officers: M. Arnold Henderson, president; C. Walter Seidel, secretary and C. M. Patterson, treasurer. Past presidents include Jim Holt, Arthur Emerson, Frank Kingsley, C. Walter Seidel and O. J. Caron. Other members are W. D. Benson, F. W. Frank, Oscar Heineman, G. T. Hutchinson, C. F. Peffer, and W. J. Yates.

•

Model Hosiery Homes

Work on the Juanita Park housing project which will supply modern home facilities to 290 families of hosiery workers in Philadelphia, was started Jan. 30. The undertaking is in charge of the Juanita Park Housing Corp., a subsidiary of the American Federation of Full-Fashioned Hosiery Workers, and was made possible by a grant of $200,000 from the Public Works Administration.

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Magnet Gives 10% Raise

A 10 per cent wage increase, retroactive to Jan. 1, has been put in effect at the mills of the Magnet Knitting Mills, Inc., hosiery manufacturers, at Clinton, Tenn., it was announced Jan. 10, by C. S. Kincaid, president. The increase affects 850 employes.

•

Large Wyomissing Class

The spring class at Wyomissing Polytechnic Institute, maintained by Textile Machine Workers, Berkshire Knitting Mills and the Narrow Fabric Co. for technical training of employes, will be twice the size of the September, 1933 class, according to current registrations.

•

Knit Mill News

Hudson Silk Hosiery Co., Charlotte, N. C., has been chartered with capital of $1,500,000, to take over and operate local company of same name, with two mills. New organization is headed by F. Seifart and M. E. Pierson, president and treasurer of former company.

Granite Hosiery Mills, Granite Falls, N. C., which was destroyed by fire Dec. 15, will be re-built. Twenty-four machines have been purchased and will be installed when the building has been completed.

Rogers Hosiery Mill, Denton, N. C., has announced that an addition will be added to the present plant, which will increase the payroll 40%.

Whisnant Hosiery Mill, Hickory, N. C., is being enlarged by the construction of a 40 x 60 ft. addition. Fifty new H-H automatic knitting machines have been purchased and will be installed in the new addition.

Foremost Silk Hosiery Co., Paterson, N. J., has been organized by Thomas F. Frawley, 74 Paterson Ave., Rutherford, N. J., and associates, with capital of 1,000 shares of stock, no par value, to operate a local mill.

Baum Knitwear, Inc., West New York, N. J., has been chartered by Max Baum, West New York, and associates, with capital of $125,000, to operate a local knitting mill. New company is represented by Irving Hoffman, 501 Bergenline Ave., West New York.

Dakota Knitting Mills, 985 Myrtle Ave., Brooklyn, N. Y., have leased space in building at Sixth Ave. and Twelfth St., same city, and will occupy for new mill.

TEXTILE WORLD'S

Processing Digest

THIS month, we are going to blow our editorial horn a bit. Elsewhere in this issue (pages 78 and 79 to be exact) will be found the second instalment of a three-part article on the textile processing industry. The first part, published last month, considered the set-up of its various branches; the current instalment describes its organization under the NRA; and the concluding article will deal with problems of importance in cotton finishing and silk finishing.

We are calling this series to our readers' attention partly because we believe this is an important contribution on a most difficult subject, but also because we are anxious to receive reactions from them, whether in agreement or otherwise.—*Editor.*

Trade Divided on Printing Curtailment

Divided opinion greeted the news that the code authority for the printing industry has recommended a 25 per cent. curtailment for the current month. Numerous converters and cutters opposed the projected move, contending that business was gradually improving and that this step would halt the pick-up. This group intimated that they would voice their opposition before the Washington hearing when it is held. The proposed 25 per cent curtailment was recommended as a step to solve the present price weakness. It is asserted that many firms are compelled to take business at figures below cost. The converters seemed especially worried that the curtailment would delay shipments of their spring merchandise in the March-April period.

•

Percale Printing Price Rise Near

Intimations of a price advance by corporation printers on percales were seen in the market toward the end of January. For the trade as a whole the question simmered down to whether the upward step would be taken first by the printers or by the direct-sellers of 80-squares. The price of 80-squares was advanced by several leading firms in the third week of the month. These firms asserted that the raise was justified by the increased cost of gray cloth replacements.

•

Finishing Agent for Rayon

Soromine SG, a new finishing agent particularly suitable for treating rayon, has been announced by General Dyestuff Corp., 230 Fifth Ave., New York. The compound is furnished in the form of a neutral white paste which can be used in either soft or hard water. It is recommended chiefly for producing a smooth and supple handle, together with a silk-like scroop, on rayon and acetate fabrics. The new product can be employed also as an addition to finishing pastes containing starch to produce a combined smooth handle and scroop on cotton or rayon. Advantages cited for Soromine SG are that it can be applied by the one-bath method and that the finished goods contain no free fatty acids.

•

Standard-Coosa-Thatcher Elects New President

Richard C. Thatcher, a son of the late A. G. Thatcher, one of the founders of the company, was elected president of Standard-Coosa-Thatcher Co., Chattanooga, Tenn., Jan. 23. He succeeds T. H. McKinney, who came to the company as vice-president and general manager five years ago when it absorbed the National Yarn & Processing Co., and who was elevated to the presidency early last year. Mr. Thatcher, who was formerly vice-president and general manager of the mills, has been with Standard-Coosa-Thatcher Co., and one of its predecessors, Coosa Mfg. Co., for more than 20 years. Other officers elected were: R. J. Mathewson, vice-president; A. H. Thatcher, treasurer; F. R. Harris, secretary; S. M. Gamble, assistant treasurer; and J. S. Verlenden, chairman of the board.

Form New Organization of Silk Printers

A new organization of silk printers has been formed in Paterson, N. J., and has taken the name of Printers Associates, Inc. The officers are: Jean Strengs, of Strengs Dye Works, president; Charles Singer, vice-president; and Michael A. Clemens, treasurer-secretary. Emanuel Shavick, counsel for the group, states that the organization has no connection with either the Independent Dyers & Printers Association, or the Institute of Dyers & Printers.

•

Finishing Charges Adjusted for Silk and Acetate Fabrics

The month was marked by considerable price activity, with acetate fabric finishing rates being adjusted to conform with complaints voiced by yarn producing companies, and weighted silk prices being substantially increased. The new acetate fabric finishing rates were reported to have been in effect in the middle of January. The 21-to-31-lb. acetate fabrics were quoted at 12 to 16c.; the 31-to-36-lb. acetates at 16 to 20c. and the 15- to 21-lb. fabrics at 10 to 14c. Acetate yarn producers had threatened to open finishing plants if prices were not lowered, contending that the high rates hurt the sale of the fabrics thus reducing call for yarns.

An increase of 35 to 50 per cent in printing weighted silks was announced by leading New York firms; these firms Jan. 15 began charging 21c, plus 1c. as against former prices of 14 to 16c. Higher prices also have been quoted on dyeing and finishing of tin-weighted and lead-weighted crepes de chine, canton crepes, and rough and crinkle crepes.

•

Textile Designers' Guild Adopts Official Seal

The task of identifying all products of members of the Textile Designers' Guild is now under way, and members are affixing the official seal of the guild to all their designs. The seals were distributed at a meeting of the Guild held Jan. 11 in New York. Officers reported progress in the movement of the Guild's code through the NRA channels.

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Improved One-Bath Hosiery Dyeing Process

An improved one-bath method for degumming and dyeing silk hosiery has been announced by Jacques Wolf & Co., Passaic, N. J. The process is based on the liberation of the Sericin B fraction of silk gum, which is said to have a powerful emulsifying, penetrating, and leveling action. The chemical used in the process is a recently developed boil-off oil which contains properly buffered peptizing salts. This is employed to-

gether with Monopole oil as a conditioning agent. It is stated that degumming and dyeing take place in 1 hr. and that the quality of the finished hosiery is maintained.

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A.A.T.C.C. Notes

At the January meeting of the New York Section, American Association of Textile Chemists & Colorists, Harry Price, of the Celanese Corporation of America, delivered a paper on recent developments in the preparation, dyeing and finishing of Celanese fabrics. The meeting was held in Paterson, N. J., Jan. 26.

Harold Schroeder, chief chemist, Dixie Mercerizing Co., was elected chairman of the South Central Section at the annual meeting of the division held last month in Chattanooga, Tenn. A technical paper on silk throwing was read by George W. Searell, of Jacques Wolf & Co., and one on silk degumming, by Henry Gaede, Laurel Soap Mfg. Co.

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Printing Machinery Hours Limited to 75%

Pursuant to the recommendation of the Code Authority, printing machines are limited, during the month of February, to 75% of the operating time otherwise allowed under the code.

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Institute of Dyers & Printers Gathering Price Data

The Code Authority for the Rayon and Silk Dyeing and Printing Industry has empowered the Institute of Dyers & Printers to proceed immediately in securing complete data on price information in the industry, it was announced last month. The order became effective Jan. 15; and dyeing, printing, and finishing companies now are sending the lists of prices to the Institute. The Institute has formed a committee to work with the Cotton-Textile Institute officials in adjusting any questions of jurisdictional overlapping.

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New Line of Sizes and Detergents Offered

Textile Chemical Products Co., Greensboro, N. C., has recently expanded its "Texchem" brand of sizing materials, chemicals, oils, and soaps to include the following products: Neutral olive flakes; olive bars; coco white flakes; palm flakes; tallow flakes; and two scrubbing soaps, one a high-alkali soap powder for the removal of grease and oil, and the other, a volcanic ash product for scouring wooden floors. In addition, the company has developed a new line of throwing sizes and emulsions.

PROCESSING IN THIS ISSUE

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Major General William N. Haskell, commanding officer of the New York National Guard, has been appointed director of the NRA Code Authority of the Rayon and Silk Processing Industry. He is at the right above. At the left is Judge John F. Evans, executive vice-president of the Institute of Dyers and Printers. Chas. L. Augur is president.

Textile Processing Code Approved

The trade-practice code for the textile processing industry, submitted by the National Textile Processors' Guild, Inc., was approved on Jan. 30, and became effective on Feb. 5. Divisions of the industry under the jurisdiction of this code include job dyers of raw stock, yarns (exclusive of silk), wool knit goods and woven fabrics, hosiery, the National Textile Processors' Guild, etc. Principal labor provisions of the code are minimum wage of $13 for a 40-hr. week for employees processing cotton and rayon yarn and $14 for all others. For workers in the South minimum rate may be 2½c. per hour lower.

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Honors Ralph E. Hall

Dr. Ralph E. Hall, director of the Hall Laboratories, Inc., Pittsburgh, has been selected as recipient of the first annual award of the Pittsburgh section of the American Chemical Society. The award is represented by a gold plaque which is to be presented to Dr. Hall, Feb. 15, at a meeting of the section.

Processing Plant News

National Fabric & Finishing Co., St. Louis unit, reports net earnings, after depreciation, of $124,544 for the year ended Sept. 30, 1933, as compared with $30,481 for 1932.

Armco Finishing Corp., Burlington, N. C., has been chartered under the laws of North Carolina to engage in finishing all types of yarns, cotton, silk, rayon, or any other fabrics. Of an authorized capital of $100,000, the sum of $50,000 has been subscribed by Britt M. Armfield, of Burlington, Benjamin and Herman Cone, of Greensboro, and Caesar Cone, of New York.

Arkwright Corp., Fall River, Mass., has taken title to the former mill of the **Davis Mills Corp.,** and will use for expansion. It is understood that the purchasing company will carry out a reconditioning and improvement program, providing facilities for occupancy of the property by the **Midland Printing Co.,** an affiliated interest.

East Braintree (Mass.) Finishing Co. has been organized with capital of 1803 shares preferred stock, and 243 shares common stock, to take over and succeed to the **East Braintree Bleachery & Dye Works, Inc.** New organization is headed by Henry W. McCusker, president, and Joseph A. McCusker, treasurer, heretofore officials of the last noted company.

Synthetic Fabrics Dyeing & Printing Co., Paterson, a subsidiary of **Rayon Industries,** has taken over the plant of the defunct **Disco Dyeing & Finishing Co.** and started operation.

Crystal Spring Bleaching and Dyeing Co., Assonet, Mass., will resume operations about March 1, after a shutdown embracing two and one-half years. The plant was sold Jan. 9 to Mrs. John Thwaites, wife of the former general manager, as reported last month.

Metro Piece Dye Works, Inc., New York, N. Y., has been organized with capital of 100 shares of stock, no par value, to operate a plant in or near New York. New organization is represented by William Kessler, 220 West Forty-second St., New York.

Triangle Piece Dye Works, Inc., Brooklyn, N. Y., has been chartered by Gustave Hordes, 93 Fairview Ave., Jersey City, N. J., and associates, to operate a dye and finishing works.

QUOTATIONS

At close of business, Feb. 1, 1934

Prices cover average qualities unless otherwise stated.

Cotton Goods

	*Feb. 1	Jan. 2	1933 Feb. 1
PRINT CLOTHS			
27 -in., 64x60, 7.60	4⅜	4⅜	2⅛
38½-in., 64x60, 5.35	7	6½	3½
39 -in., 68x72, 4.75	7⅛	7⅛	3½
39 -in., 72x76, 4.25	9	8¼	3¾
39 -in., 80x80, 4.00	9⅜	9	3⅞
BROWN SHEETINGS			
36-in., 56x60, 4.00	7⅜	7⅛	3⅜
36-in., 48x48, 5.00	6¼	5⅞	2¾
37-in., 48x48, 4.00	7⅛	6⅜	3
MISCELLANEOUS			
Drills, 37-in., 3 yd	9⅜	9⅛	4¾
Denims, 2.20	15½	15⅜	9
Tickings, 8 oz.	18½	18⅜	11
Standard prints	7	7	6

*Tax included.

Cotton Waste

Peeler comber	12.00c
Peeler strip	11.25c
White spooler (single)	5.75c

Cotton Prices

Spot Cotton at:	Feb. 1	Jan. 2	For Month High	For Month Low	1933 Feb. 1
New York	11.75	10.50	11.75	10.45	5.90
New Orleans	11.42	10.35	11.42	10.34	5.75
Liverpool	6.23	5.39	6.17	5.33	5.02

FLUCTUATIONS OF FUTURES

	Closed Feb. 1	For Month High	For Month Low	Closed Jan. 2	Net Change
Feb.	11.35	11.37	10.33	10.35	+1.00
Mar.	11.39	11.42	10.42	10.42	+0.97
April	11.47	11.47	10.49	10.49	+0.98
May	11.55	11.56	10.58	10.58	+0.97
June	11.63	11.62	10.64	10.64	+0.99
July	11.72	11.72	10.72	10.72	+1.00
Oct.	11.92	11.92	10.91	10.92	+1.00
Dec.	12.01	12.05	11.06	11.07	+0.94
Jan.	12.09	.....	.....	.....	.....

AVERAGE PRICE JUNE-JULY SHIPMENT HARD WESTERN COTTON

F.o.b. New England

	Middling	St. Middling
1⅛-in.	14.20	15.45
1 3/16-in.	15.45	16.95
1¼-in.	18.45	20.45

FOREIGN COTTONS

Alexandria Exchange, Feb. 1

January, Sak.	.....
February Uppers	.....
Shipment c.i.f. Boston (Tariff not included)	
Medium Sak.	26.50
Medium Uppers	22.20
(By Anderson, Clayton & Co.)	
India Rough, Calcutta Camilla	11.50
China Tientsin No. 1	13.00

Quotations on cotton cloth and cotton yarn as given on this page include the cotton processing tax. Where figures for dates earlier than Aug. 1, 1933, are given for comparison, such figures of course do not include this tax.

Cotton Yarn (Nominal)

(Tax Added)

CARDED (Average Quality)

Double Carded 2c—4c., higher according to quality.

SINGLE SKEINS OF TUBES (Warp Twist)

4s to 8s	$0.27	20s	$0.30½
10s	– .27½	24s	– .32½
12s	– .28	26s	– .33½
16s	– .29	30s	– .35½

TWO-PLY SKEINS AND TUBES

8s-2	$0.27½	20s-2	$0.31
10s-2	– .28	24s-2	– .33
14s-2	– .29	30s-2	– .36
16s-2	– .29½	40s-2	– .42

SINGLE WARPS

10s	$0.28	20s	$0.31
14s	– .29	24s	– .33
16s	– .29½	30s	– .36

TWO-PLY WARPS

8s-2	$0.28	20s-2	$0.31½
10s-2	– .28½	24s-2	– .33½
14s-2	– .29½	30s-2	– .36½
16s-2	– .30	40s-2 ordin.	– .42½

HOSIERY CONES (Frame Spun)

8s	$0.27	18s	$0.29½
10s	– .27½	20s	– .30½
12s	– .28	22s	– .31½
14s	– .28½	24s	– .32½
16s	– .29	26s	– .33½

COMBED PEELER (Average Quality)
TWO-PLY — (Knitting Twist) Cones

20s-2	$0.40	50s-2	$0.53
30s-2	– .45	60s-2	– .59
40s-2	– .49	80s-2	– .78

WARPS, SKEINS AND CONES
TWO-PLY — (Warp Twist)

20s-2	$0.41	50s-2	$0.55
30s-2	– .46	60s-2	– .61
36s-2	– .48	70s-2	– .71
40s-2	– .50	80s-2	– .81

SINGLES

14s	$0.35½	38s	$0.47
20s	– .38	40s	– .48
28s	– .42	50s	– .53
30s	– .43	60s	– .60

MERCERIZED CONES — (Combed, Ungassed)

30s-2	$0.54	60s-2	$0.74
40s-2	– .59	80s-2	– .98

Raw Silk

Prices Nominal

	13/15 White	20/22 White	20/22 Yellow
Special Grand, 85%	$1.76	$1.58	$1.56
Grand XX, 83%	1.66	1.55	1.53
Special Crack, 81%	1.62	1.53	1.51
Crack XX, 78%	1.58	1.52	1.49
Extra, Extra, 73%	1.55	1.50	1.47
Best Extra, 68%	1.51	.....	.....

RAW SILK EXCHANGE

	Feb. 1	Jan. 5	For Month High	For Month Low	Net Change
February	1.47½	1.36½	1.45	1.34	+0.11
March	1.49	1.37	1.48	1.35	+0.12
April	1.49	1.39	1.48	1.35½	+0.10
May	1.49	1.39½	1.49½	1.35	+0.09½
June	1.49	1.38½	1.50	1.35	+0.10½
July	1.49½	1.39	1.51	1.35½	+0.10½
August	1.50	1.39	1.51	1.35½	+0.11

Silk Yarns

Hosiery tram 5thd. Japan, 85%	$2.45
Hosiery tram, 5thd. crack XX, 78%	2.27½
60/2 spun silk	2.95

RAW WASTE

Thread (for garnetting)	$0.15–$0.18

Wool

OHIO, PENNSYLVANIA, ETC. (GREASE)

Fine delne.	$0.35–$0.37	⅜ blood	$0.42½–$0.43½
Fine clthg.	.28– .29	¼ blood	.41½– .42½
⅛ blood	.36– .38		

TEXAS AND CALIFORNIA (CLEAN)

Texas, 12 months	$0.82 –$0.84
California, Northern	.74 – .77

MONTANA, IDAHO, WYOMING (CLEAN)

Staple fine	$0.86 –$0.88
Staple ½ bld.	.83 – .85
Fine and fine medium (original bag)	.81 – .83
⅜ blood	.81 – .83
¼ blood	.73 – .75

EASTERN SCOURED PULLINGS

A.A.	$0.95 –$0.97	B-Super	$0.73 –$0.80
A-Super.	.85 – .88	C-Super	.68 – .72

CARPET WOOL (Nominal)

Aleppo (clean)	$0.20 –$0.22
Sining	.13 – .17
China filling (clean)	.12 – .16

Tops and Noils

TOPS—BOSTON

Fine (64-66s)	$1.18 –$1.20
Half-blood (60-62s)	1.14 – 1.15
Aver. ⅜ blood (56s)	1.07 – 1.08
¼ blood (50s)	.96 – .98

NEW YORK TOP FUTURES

	Closed Feb. 1	For Month High	For Month Low	Closed Jan. 2
February	106.00	108.30	105.00	105.50
March	106.90	108.60	105.40	105.00
April	107.10	108.90	105.40	105.40
June	107.60	109.50	106.20	106.20
July	108.00	109.90	106.60	106.30

TOPS — BRADFORD ENG. (Feb. 1)

Fine (64s)	41¾d	⅜ bld. (56s)	31d
½ bld. (60s)	39¾d	¼ bld. (50s)	23½d

NOILS — BOSTON

Fine	$0.57 –$0.59	⅜ bld.	$0.51 –$0.53
Half bld.	.53 – .55	¼ bld.	.49 – .50

Worsted Yarns

ENGLISH SYSTEM WEAVING

2-20s 44s.	$1.25 –$1.30	2-36s 58s.	$1.55 –$1.60
2-30s 46c.	1.35 – 1.40	2-40s 60s.	1.65 – 1.70
2-30s mixes	1.75 – 1.85	2-50s 64s.	1.80 – 1.85

ENGLISH SYSTEM KNITTING

2-20s 44s.	$1.20 –$1.25	2-20s 60s.	$1.45 –$1.50
2-20s-50s.	1.25 – 1.30	2-20s 64s.	1.50 – 1.55

FRENCH SYSTEM

1-26s 64s.	$1.50 –$1.55	2-40s 64s	
1-30s 64s warp	1.55 – 1.60	Zephyrs.	$1.75 –$1.77½
		2-50s 66s.	1.90 – 1.95

Domestic Rayon (Skeins)

VISCOSE PROCESS

Denier	Filament	Price	Denier	Filament	Price
50	14	$1.25	150	24–40	$0.65
75	30	1.00	150	60	.70
100	40	.85	300	44	.55
125	36	.72			

NITRO-CELLULOSE PROCESS

Denier	First Qual.	Denier	First Qual.
75	$1.05 –$1.10	150	$0.70
100	.90 – .95	175	.70

ACETATE PROCESS

Denier	Price	Denier	Price
45	$1.40	100	$1.10
60	1.25	120–125	1.05
75	1.15	150	1.00

CUPRAMMONIUM PROCESS (TWISTED)

Denier	Filament	Price	Denier	Filament	Price
30	24	$1.60	100	75	$1.00
75	60	1.20	150	112	.90